

Flight, November 5, 1910.

FLIGHT

First Aero Weekly in the World.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

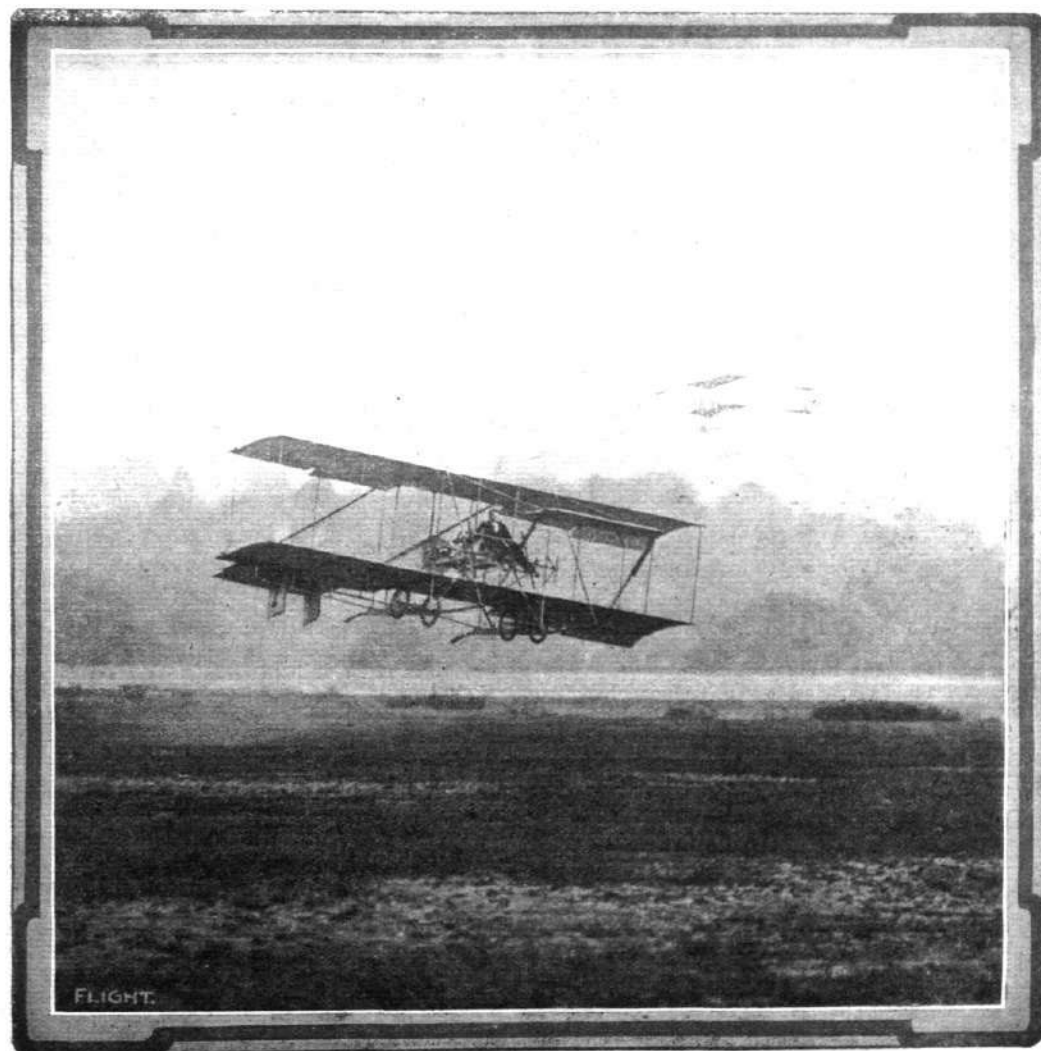
OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

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AT BROOKLANDS AERODROME.—Mr. R. F. Macfie on a Macfie biplane flying low recently at Brooklands grounds, with M. Blondeau above on a Farman biplane.

A BRITISH TRIUMPH.

To those who take a pessimistic delight in repeating that Great Britain is going to the dogs, and is lagging behind in the race of nations, the victory of Mr. Grahame-White in the second of the series of races for the Gordon-Bennett Trophy must have come somewhat as a shock. It seems as if the story of the development of automobilism in this country was to be written over again in its application to the newer science of flight. With all the innate conservatism of the race, the nation as a whole stands aloof, sceptical until the last of the possibilities of anything that is new, until demonstration points unmistakably to potentialities for the future. Then the energetic ones begin to touch the fringe—as though it would burn—and, having satisfied themselves that it is worth handling, they go for it, diffidently at first and with much misgiving, but gathering faith and enthusiasm with progress, at last the country achieves to the position that should have been hers from the start. So it was with automobilism. Others experimented commercially and kept on experimenting, while the British business world looked on with little faith in the future development of the new locomotion, until at last a stage was reached at which it could no longer be neglected. Then financiers and manufacturers set seriously to work and with characteristic energy built up an industry that is second to none in volume and which stands technically at the head of all.

In aviation the same is happening. The practical solution of the problem of human flight ultimately came from without, even though the purely scientific work started with British investigators. For a time belief in its potentialities was utterly lacking over here and no attempt was made to regard it seriously. Until very recently it was the fashion to say that we had not an aviator who even approached first-class form, though the feats of poor Rolls and of Grahame-White, Capt. Dickson and others put it beyond all doubt that Great Britain had at last made up her mind to forge ahead. Even then, the story of international competitions was none too flattering to the national *amour propre*. Our aviators were handsomely beaten wherever they appeared. Meetings were arranged all over the country, huge sums of money being provided by way of prizes chiefly to be annexed by flying men from across the Channel. Even in the case of the London-Manchester flight, which, more than any other event of its kind, went to make aviation history in Great Britain, a foreigner snatched the victory just when it seemed within the native grasp. That, however, is a told story, and it is in the present and the future that the Anglo-Saxon race must make amends.

An admirable start is to be found in the splendid victory which has assured to the United Kingdom the holding of the world's most important aerial race in this country next year. Two things only we would have had otherwise—apart from the very disgraceful friction between the management and the competitors over the Statue of Liberty contest, held at the same meeting. Mr. White undoubtedly put up a wonderful performance over the dangerous Long Island circuit and thoroughly deserved his win. We had rather, though, that he had not won at the expense of poor Leblanc, who apparently fell a victim to the dangerous nature of the course, against which more than one of the aviators, including himself, had previously protested. It was the hardest of hard luck thus to find himself put out of the running just when the race seemed a certainty for him ;

but we must not forget that having regard to the nature of the circuit, superior skill must have counted materially in Mr. White's favour. After all, it is *prima facie* presumable—the speeds of Leblanc and Grahame-White being so nearly equal—that had the former been as skilful in handling his machine as his competitor he would have been able to complete the race. Hence his accident does not really detract in any tangible way from the honour of the British win.

The other regrettable point is that Grahame-White won the race on a French aeroplane. That argues that although this country has come on so far as to have equally skilful and daring pilots as those of any other land, she still lags behind constructionally. This is not as it should be, for at this stage in the development of the aeroplane some native genius should surely have come forward with designs at least equal to the best of the French machines ; or at least some native manufacturing organisation should have succeeded in building an equally good version of the aeroplanes that have proved their merits. However, that will certainly come almost immediately now, and meanwhile it is well to be thankful for the greatly improved prospects of the past week.

It is especially flattering to the national vanity that of the only four competitors to complete the whole distance two were representatives of this country. While Mr. Ogilvie's flight was eclipsed in spectacular interest by that of the winner, it was nevertheless a very fine performance, sound if not particularly brilliant ; and the thanks of Great Britain are due to him in only slightly less degree than to Grahame-White for so worthily upholding the honour of British aviation. As to the future of the Gordon-Bennett Race, the fact of its being held in England next year must exercise a decidedly beneficial influence upon the development of the industry in this country. It is only necessary to carry one's memory back to the parallel case of the British win in the race for the Gordon-Bennett Motor Trophy in 1902, with the resultant race in Ireland in the following year. Up to that time, automobilism had progressed well enough ; a steady but rather slow expansion was the order of the day, when along came Edge's victory to stimulate interest and to drive home the conviction that motoring was one of the things that had to be reckoned with, and the public opened its eyes to the fact that here was a new industry in which such headway had been made at home that a British car and a British driver were good enough to win against the pick of the whole world. Then came the Irish year, with the endless discussion that turned about the legality of holding a road race on Irish highways, and the consequent Act of Parliament, all of which stimulated the public interest in motoring and thus did inestimable good to the movement. Next year every prospect presents itself for a similar direction of interest towards aviation. There is the competition for the *Daily Mail* prize of £10,000 and now there is the Gordon-Bennett Race also to be fought out on a British course. The pick of the world's flying men will come over to compete in both events, and there is the British title to defend in the latter as well as the onus to see that this time the *Daily Mail* money shall remain in this country. It may confidently be trusted that by the time these two races fall due there will not only be the men but the machines to ensure all-British victories in both cases.

AERIAL MOTORS AT THE SALON.

By OISEAU.

It is difficult to speak of any noticeable tendency of design in the engines on show. Each particular type has its adherents who are apparently not in the least discouraged by the extraordinary success

25-30-h.p. 2-cyl. two-stroke rotary, termed the "Aeroturbine," manufactured under licence from Farcot d'Albaret. The same construction is employed as in the other type, save, of course, for the alteration of design. The weight is 35 kilogs., and the normal number of revolutions 1,200.

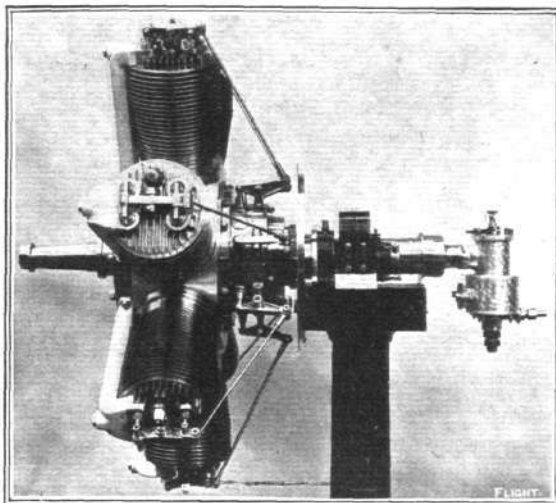
The 60 h.p. Filtz rotary motor is of six cylinders (130 mm. bore \times 110 mm. stroke), a somewhat unusual number. The crank-case is of steel, but the cylinders of cast iron, and no visible means is shown of assisting to withstand the strain set up by centrifugal force. The combustion-chamber has pockets projecting in the front of the motor, in which the mechanically-operated valves operate as in ordinary car practice. The sparking plugs are placed between the valves, pointing inwards towards the crank-case. A Filtz carburettor is placed at the end of the hollow crank-shaft, and the gas goes to the cylinders through induction-pipes passing between the cylinders to the inlet-valve in front. A Mea magneto is fitted. The weight is 91 kilogs.

The 8-cyl. 45-h.p. Beck rotary motor is extremely difficult to describe with any clearness. The cylinders are in four cast-iron sections, curved round the circumference of the engine in pairs. In each casting are two pistons, with a combustion-chamber at either end of the cylinder. Between the pistons are slots in the cylinder-walls, through which the connecting-rods oscillate. The crank-shaft is in the normal position. The valves are mechanically operated, a U.H. magneto is fitted, and 45-h.p. is developed at 1,000 revolutions. The bore and stroke are 100 mm. \times 140 mm. The weight is 145 kilogs. Previous descriptions of the Beck appeared in FLIGHT of November 13th, 1909.

M. P. Ligez shows a 3-cyl. rotary engine, but the propeller is driven in the opposite direction, thus, according to the maker, overcoming any gyroscopic effects. The motor rotates at 400 revs. a minute, and the propeller at 900. The crank-case is of aluminium, and the cylinders of cast iron. The valves are mechanically operated. A G. and A. carburettor and a Simms magneto are fitted.

On the Sigma stand a 2-cyl. rotary is shown developing 35-h.p. at 1,140 revs. From the cylinder-heads spring the propeller-blades, thus combining in one both engine and propeller. The cylinders are of cast iron, and are fixed to an aluminium crank-case. The valves are rotary driven by a rotating shaft from a bevel-gearing on the crank-shaft. A Mea magneto, now so popular, is fitted.

As might be expected one or two new radial or semi-radial air-cooled motors appear at the Paris Show. Generally speaking



7-cyl. 65-h.p. Verdet rotary motor, weight 85 kilogs., at Paris Flight Salon.

of any other type. Freakish designs show a slight increase, but not under the reign of any serious manufacturer.

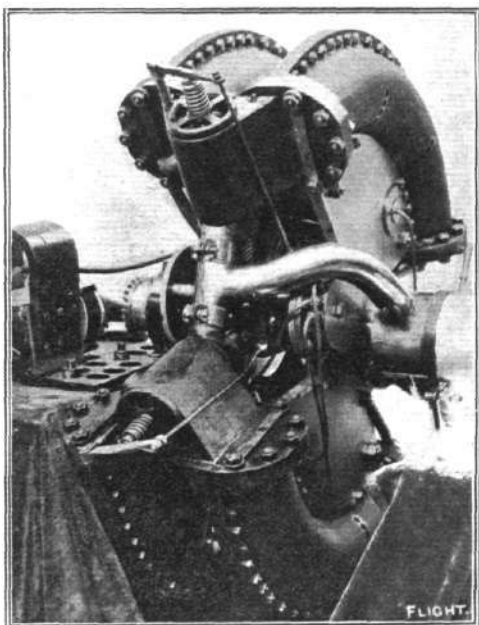
Makers appear to realise at last the absolute necessity of the most perfect finish possible in the construction of motors. Weight has become of less importance, and one sees in the Show many engines which during the latter part of the year have had considerable success, due mainly to the greater strength of construction gained by a slight increase of weight. Force-feed lubrication of some kind is practically universal, except in rotary motors.

Messrs. Seguin this year show three models of the Gnome rotary motor—one new 50-h.p. 7-cyl. type, having mechanically-operated valves and external induction pipes, and of the old type a 50-h.p. 7-cyl. and a 100-h.p. 14-cyl. All three are too well known to need description here, especially as no change of any importance has taken place.

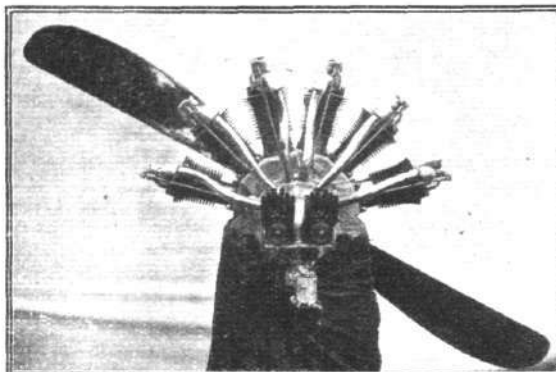
Messrs. Bajard and Monier show the Verdet 7-cyl. rotary engine of 65-h.p. This motor only arrived in the Show on Monday morning, but has already attracted considerable attention, owing to the extraordinarily careful manner in which it has been designed and finished. As on the Gnome, both the crank-case and the cylinders are of steel, the latter having on them very deeply-cut radiating fins. Two inlet-valves and two exhaust-valves are fitted in each cylinder-head, and are actuated by two rocker arms and rods, controlled by a revolving cam-plate on the crank-shaft. It is noticeable that the valve springs are extremely light, centrifugal force evidently being relied on to return them to their seating. A Longuemare carburettor, placed at the end of the hollow crank-shaft, provides the mixture, which is distributed to the cylinders through seven induction-pipes placed in front of the cylinders, a wrong position surely, as the draught induced by the propeller will certainly keep the pipes a little too cold. The U.H. magneto used is of very small dimensions. The entire weight of the engine is only 85 kilogs. As shown, the engine is incomplete.

Another excellent rotary motor of the Gnome type is the Rossel-Peugeot, also of seven cylinders. The power is 50-h.p. at 1,100 revs., and the weight 71 kilogs. The construction, as in the former engines, is entirely of steel. A single rocker-arm, hinged to a rod driven from a grooved cam-plate of ingenious design fixed on the crank-shaft, actuates both valves, which are in the cylinder-head. A carburettor of their own design supplies gas to the cylinders through induction pipes placed at the back. Lubrication is by pump and centrifugal force. The Bosch magneto is used driven direct from the crank-shaft.

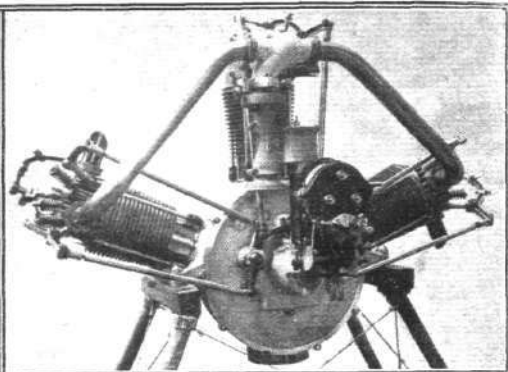
On the same stand and made by the same firm is exhibited a



8-cyl. 45-h.p. rotary Beck motor at Paris Flight Salon.



6-cyl. 50-h.p. le Masson motor, weighing 105 kilogs., at Paris Flight Salon.



35-h.p. Viale motor, weighing 75 kilogs., at Paris Flight Salon.

no great alteration of design is noticeable, attention having chiefly been paid to improvement in detail and in methods of manufacture. Questions of lubrication seriously affect the all-round efficiency of this type, and with one exception I believe no flight of over the hour has been made with a radial air-cooled engine.

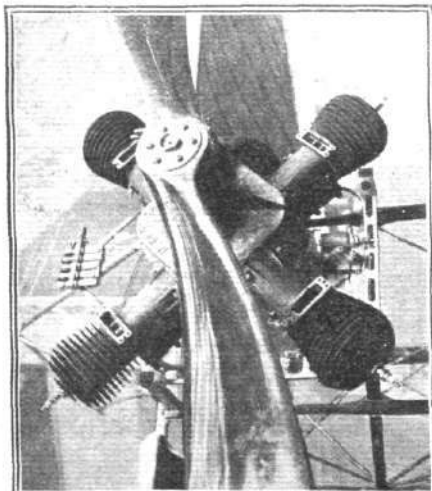
Anzani still holds faithfully to his first ideas, and shows three models, one a completely radial five-cylinder. He shows a four-cylinder water-cooled engine of normal design, but makes no effort to push it, preferring to follow up his original successes. The 3-cyl. 25-h.p. cross-Channel has now a magneto fitted behind the crank-case. A larger model of the same motor is constructed, developing 50-h.p., and can be had either water or air-cooled. The motor exhibited of most interest, however, is the before-mentioned 50-h.p. 5-cyl. radial air-cooled. It resembles in superficial design the well-known three-cylinder, with the addition of two cylinders. Bosch magneto ignition is alone fitted to this motor. The three upper cylinders are lubricated by means of a pump, and the two lower, if one is to take literally the statement of one of the attendants on the stand, are "full of oil."

Perhaps the most interesting semi-radial engine, and certainly the most successful, in the Salon, is that of M. Esnault-Pelterie. It differs but little from the model shown last year, but in that little lies the whole secret of success. The five cast-iron cylinders are mounted in fan-shape on an aluminium crank case, the second and fourth cylinders being brought forward sufficiently to allow of them

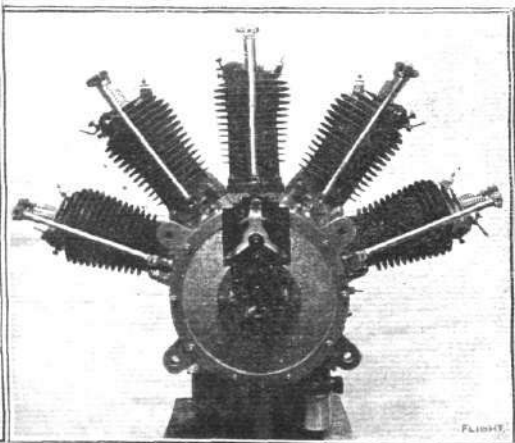
working on a separate crank. The two valves are placed in the cylinder-head, and are operated by a single rocker-arm, pivoted on an arm projecting from the cylinder-head between the two valves, and driven by steel rods direct from the cam-wheel in the crank-case. Lubrication is by pump. The crank-shaft and connecting-rods are drilled to take the oil. A Bosch magneto—a special type—is fitted on a special table projecting from the crank-case. The carburettor is placed at the base of the crank-chamber, only the float-chamber appearing outside, thus the volatilising portions are continually in a bath of warm oil. The mixture reaches the cylinders through induction-pipes placed in front of the cylinders, thus, I take it, completely nullifying the warming effect of the oil. Two powers are made, of 40 and 60-h.p.

The Canton-Unné is a completely radial water-cooled motor of seven cylinders. The cylinders (as also the crank-case) are of steel, with copper water-jackets. The radiator is of tubes running between each cylinder. The inlet and exhaust-valves are placed side by side in the cylinder-heads, and are actuated by separate rocker arms and rods, worked in the customary manner by a cam-wheel on the crank-shaft. Ignition is by high-tension magneto.

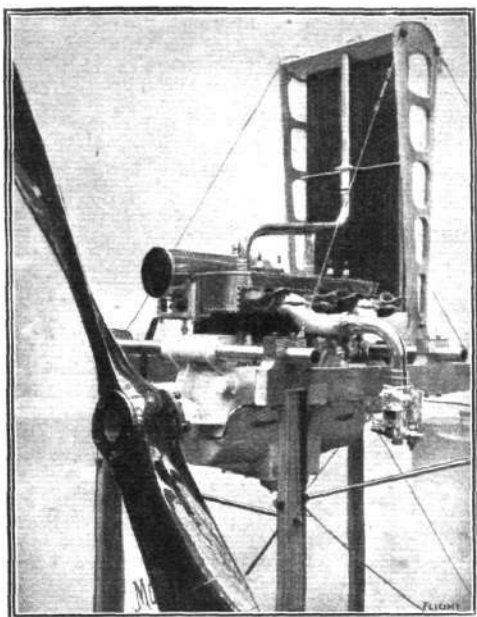
Messrs. Viale exhibit a five-cylinder completely radial air-cooled motor of 55-h.p. The cylinders are of cast iron with ailettes, and mounted on an aluminium crank-case. The crank-shaft, which is hollow for lubrication purposes, is mounted in ball-bearings. There are two exhaust-valves in each cylinder, placed side by side and opened by a bridge at the base of the two valve-stems. The inlet-valve, which is in the cylinder-head, is actuated by a rocker arm and rod. All the valves are driven from one cam-wheel. Lubrication is



4-cyl. 50-60-h.p. Berthaud motor, weighing 85 kilogs. (air-cooled 105 kilogs.), at Paris Flight Salon.



5-cyl. 55-h.p. R.E.P. motor at Paris Flight Salon.



4-cyl. 50-h.p. Aster motor, weighing 70 kilogs., at Paris Flight Salon.

pressure-fed, and ignition high-tension magneto. There is also shown a three-cylinder semi-radial of similar design, save for the valve mechanism. In this case both the exhaust-valves and the inlet-valve appear in the cylinder-head, and are actuated by a series of rocker arms, which appear strangely complicated. In practice the system is really quite simple and efficient.

Among V-type engines, only one really new motor appears, the 200-h.p. Clerget. Remarkably little change has taken place in the other makes. The Antoinette, the first of aeroplane motors, still retains its original features of design. A fly-wheel has been added, and if desired magneto ignition can be supplied, but otherwise no

change is to be noticed. All parts are strengthened greatly. In the early days the chief reason of the Antoinette monoplane's frequent failures and unreliability was the constant breakage of induction pipes and such delicate parts. Now these sections of the engine have been strengthened beyond the risk of breakage, and the successes of Labouchere at Rheims and the cross-country journeys of M. Latham are sufficient testimony of the engine's excellence.

The Renault, an eight-cylinder air-cooled aviation motor, of which strangely little has been heard, appears with no alterations of importance. In France the good points of the engine were well known, and its recent successes were not unexpected. It has the distinction of being the first stationary engine to defeat or even equal the rotary motor for duration of flight. Tabuteau, flying a Maurice Farman biplane (a make, it will be remembered, which from the beginning has used almost exclusively the Renault), remained in the air over six hours at Etampes one day last week. A small 4-cyl. 25-h.p. motor of similar design is shown also.

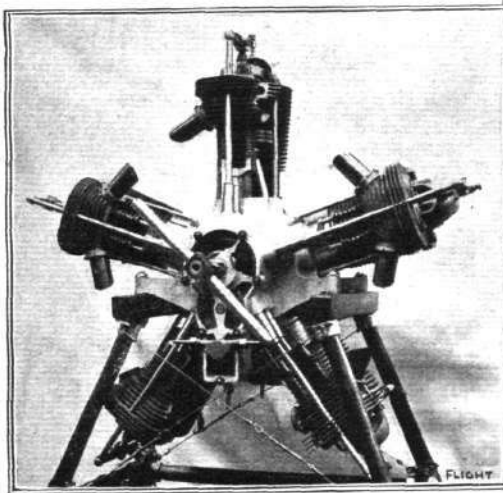
The E.N.V. Co. exhibits two new engines in addition to their previous models—one a 4-cyl. horizontal opposed, and the other a 100-h.p. 8-cyl. V-type for dirigibles and motor boats. I understand that the company intend fitting one of these latter engines to an Antoinette monoplane. In appearance and general design it differs but little from the previous lower-powered E.N.V. models.

The 200-h.p. 8-cyl. Clerget is chiefly notable for its high power combined with its light weight. In general construction it is of conventional design. The cylinders are of steel with deposited copper water-jackets, and are mounted on a crank-case of aluminium. The inlet and exhaust-valves are both in the cylinder-heads. The exhaust-valve is operated by a rocker arm, the rod controlling which is hollow and contains the rod actuating the inlet-valves. One cam-shaft placed between the rows of cylinders operates all the valve-rods. Two carburetors and two Bosch magnetos are employed.

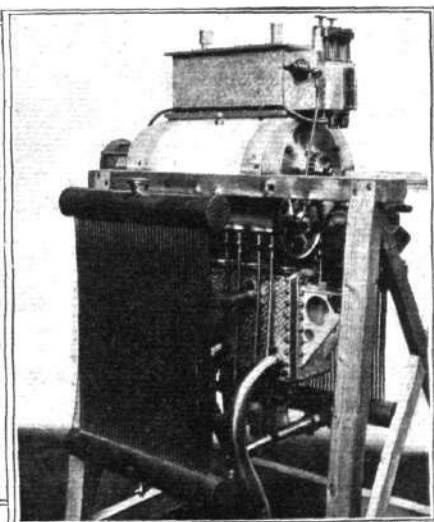
M. Duthell, Chalmers et Cie. show two models this year; one, the well-known small two-cylinder opposed, in which no change has been made, and a large eight-cylinder horizontal engine of unique design. The cylinders are in sets of four, placed head to head, each pair sharing one combustion-chamber, as in the Gobron-Brillie, but differing from this make in that each set of four cylinders has its own crank-case and fittings, making the whole machine practically two engines placed head to head. By this means two propellers can be driven from absolutely rigid bases at an even speed without chains. The suggested use of the engine is for dirigibles.

M. Luère, in addition to his semi-radial engine, exhibits a two-cylinder air-cooled opposed motor of 30-h.p. The cylinders are of cast-iron with ailettes, and are on an aluminium crank-case. The mechanically-operated valves are placed in the cylinder heads. The inevitable Bosch magneto is used.

The 4-cyl. 50-h.p. opposed "Oerlikon" motor has many points



55-60-h.p. 5-cyl. rotary Viale motor at the Paris Flight Salon. Weight 85 kilogs.

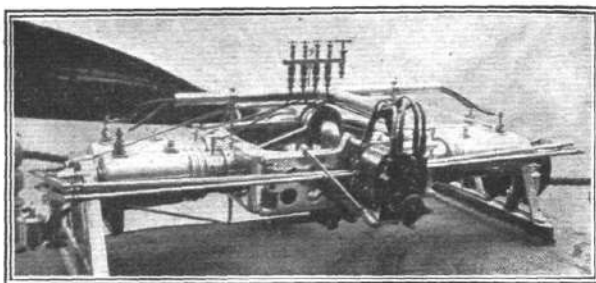


The inverted Gregoire-Gyp aviation motor, as on view at the Paris Flight Salon.

of interest. Despite its power and size its total weight complete is only 75 kilogs. The four steel cylinders have aluminium water-jackets, and are bolted to an armoured frame of aluminium, the crank-case proper being prominent by its absence. The crank-shaft and its attachments work in the open air. Lubrication is gravity-fed, the big-ends receiving oil through the hollow crank-shaft. Two carburetors are employed, each supplying a pair of cylinders. The valves are mechanically operated and on the cylinder-head.

Most vertical aeroplane motors follow ordinary car practice in all essential details. Makers have discovered that the striving after strange effects is not always attended by success. Abnormal appearance is frequently accompanied by abnormal results, not always of the encouraging type. In the beginning of any industry there are always many whose strangely-warped brains produce weird and complicated machines, warranted to do anything save the work required of them; but hardly any scientific movement has so rapidly killed its freaks and discouraged its insane followers as aviation. That deadly "let me see it work" is unkind, but curiously effective. And so to-day there is little of the mysterious and marvellous to be seen on show.

The biggest show of engines in the Salon is to be seen on the Clement-Bayard stand, where no less than eight appear apart from those fitted to the Demoiselle monoplanes. The powers range from 30-h.p. to 220-h.p. All save one horizontal opposed (30-h.p. two-



4-cyl. horizontal 50-70-h.p. Oerlikon-Zurich motor, weighing 75 kilogs., at Paris Flight Salon.

dirigible work, and the Clement-Bayard airship, recently purchased by the British Government, has two of the 130-h.p. type.)

Messrs. Gobron have given up their original cruciform eight-cylinder aviation motor, and now build a four-cylinder of similar design to their car engine. They claim that the Gobron system of two pistons working in each cylinder gives most excellent balance and smoothness of rotation to the engine.

Panhard have several aeroplane and dirigible motors displayed, among them being the new six-cylinder 50-h.p., used recently on the Tellier monoplane. As might be expected the work is distinguished by the perfection of finish of every detail. As on the majority of the Panhard cars the cylinders are turned out singly but with deposited copper water-jackets and overhead valves, the inlet and exhaust valves being separately operated from opposite sides of the engine.

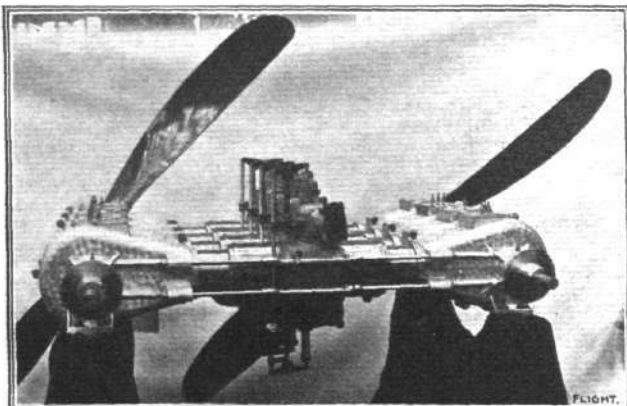
Gregoire-Gyp, in deference, I imagine, to public opinion, have produced a normal type of motor in addition to their "type inversé." They claim, however, that not only is the lubrication more perfect in action in the latter type of engine than in any other vertical motor, but that owing to the position of the cylinders, monoplane pilots have a much freer view in front. For general neatness of design and careful finish the Gregoire-Gyp certainly stand high.

The Clerget vertical four-cylinder motor, which has proved so successful in the Hanriot monoplane, appears without change.

The Austrian section of the Mercedes Company exhibit a four-cylinder 35-h.p. motor of conventional type, which is remarkably light, even after the radiator and necessary water has been added.

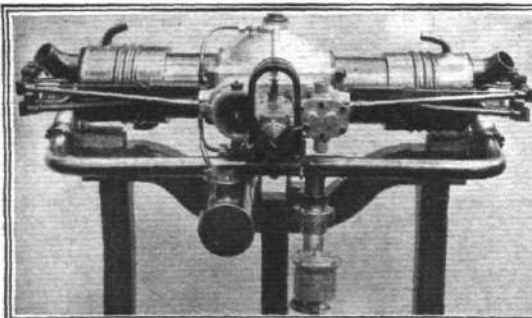
A new vertical motor of some popularity is the Chenu, which is fitted by the Société Astra to their biplane.

M. Weisz shows an engine of strange appearance, in which the four pistons are bolted to a steel base, the cylinders moving up and down the pistons. The connecting-rods are attached to the cylinder heads, and the crank-shaft is fitted overhead and works in the open. Both the inlet and exhaust valves are in the head of the piston, and operated from a cam-shaft driven by helical gearing from the crank-shaft. Ignition is by Bosch magneto, and connection is made with the moving cylinders through flexible steel tapes.

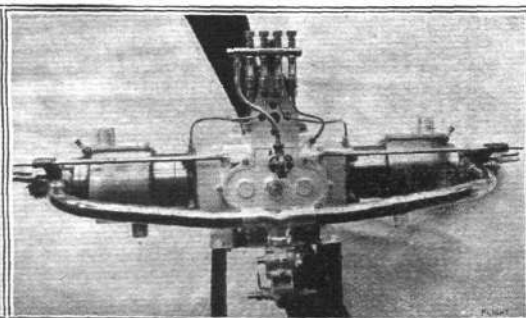


100-h.p. 8-cyl. Duthell-Chalmers motor for dirigibles at the Paris Flight Salon.

cylinder), are of the normal vertical type. The most commonly employed in aviation, apart from the small type just mentioned, is the 40-h.p. four-cylinder monobloc. This in no way departs from car practice save as to lightness. As in all the engines, a fly-wheel is fitted, and in some cases a clutch. There are shown in four cylinders of similar design a 70-h.p., a 105-h.p., 130-h.p., and a 220-h.p., and in six cylinders, one of 180-h.p. and another of 200-h.p. Naturally, all those of above 70-h.p. are intended for



2-cyl. 30-h.p. Clement motor, weighing 50 kilogs.



The 30-h.p. 2-cyl. Coudert motor at Paris Flight Salon

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

Committee Meeting.

A MEETING of the Committee was held on Tuesday, the 1st inst., when there were present:—Mr. John Dunville (in the Chair), Mr. Griffith Brewer, Mr. Ernest C. Bucknall, Mr. Cecil S. Grace, Mr. F. K. McClean, and Harold E. Perrin, Secretary.

New Member.—The following new member was elected:—Lord Lucas.

The Late Prince Francis of Teck.—The following letter was read from the Royal Automobile Club:—

"To the Secretary, Royal Aero Club.

"DEAR SIR,—Please convey to the Committee of the Royal Aero Club the sincere thanks of the Committee of the Royal Automobile Club for its kind expression of regret and sympathy in connection with the loss which the Club has sustained in the death of its beloved Chairman.

"I beg to remain,

"Yours faithfully,

(Signed) "J. W. ORDE, Secretary."

Gordon-Bennett Aviation Cup.—The following resolution was passed:—

"The Committee of the Royal Aero Club heartily congratulates Mr. Claude Grahame-White on his splendid achievement in winning the Gordon-Bennett Aviation Cup for Great Britain."

Aviators' Certificates.—The following aviator's certificate was granted:—

No. 23. Maurice Ducrocq.

The request of the Aero Club de France to grant an aviator's certificate to Mr. E. A. Paul was sanctioned.

Paris Conference.—A vote of thanks was unanimously passed to the delegates who attended the Conference in Paris.

"Daily Mail" Cross-Country Prize.—The figures of the total mileage accomplished by M. Louis Paulhan and Mr. Claude Grahame-White, competitors for the *Daily Mail* Cross-country Prize, were considered and passed. The certified totals were as follows:—

M. Paulhan ... 1,290.9 kiloms. = approximately 802 miles.

Mr. Grahame-White 1,132.911 " = 703½ miles.

M. Paulhan therefore wins the £1,000 prize.

Federation Aéronautique Internationale.

The annual meeting of the Fédération Aéronautique Internationale took place in Paris, on the 27th, 28th and 29th October. The following countries were represented:—Austria, Belgium, Denmark, France, Germany, Great Britain, Holland, Italy, Norway, Russia, Spain, Sweden, Switzerland, United States.

The following were delegates from the Royal Aero Club:—

Mr. Griffith Brewer.

Mr. C. G. Grunhold.

Mr. V. Ker-Seymer.

Mr. F. K. McClean.

Mr. J. T. C. Moore-Brabazon.

Mr. Mervyn O'Gorman.

Mr. G. Stanley White.

Mr. H. E. Perrin (Secretary).

The chief question down for consideration was the standardisation of certificates for aeroplanes, dirigibles and balloons. With regard to aeroplanes, it was resolved that the tests should, in future, comprise flights of 5 kilometres with figures of 8 and that a height of at least 150 ft. must be attained. The new rules will come into force on February 15th, 1911.

Full particulars of the Conference will be published at a later date.

On Saturday, the 29th, the delegates attended the Paris Aero Show and were received by M. Robert Esnault-Pelterie. In the afternoon they visited the aviation schools of Maurice Farman and Robert Esnault-Pelterie at Buc, and a large number of flights were witnessed. In the evening the Aero Club de France gave a banquet to the delegates, at which Count Henry de La Vaulx presided. During the proceedings the result of the competition for the Gordon-Bennett Aviation Cup was reported, and the Chairman warmly congratulated the Royal Aero Club on the success of its nominee.

Rolls Memorial Fund.

Members who have not yet sent in their contributions to the above Fund are requested to do so as early as possible. By limiting individual subscriptions to the sum of 10s. the Committee hope they will receive the support of all members.

A list of subscriptions received up to October 26th, 1910, was published in the last issue, and the following have since contributed up to the 2nd November, 1910:—

Capt. C. J. Burke, F. R. Simms.

HAROLD E. PERRIN,
Secretary.

166, Piccadilly.



Meeting of the "Fédération Aéronautique Internationale" at the Aero Club of France, Paris, on October 27th.—On the left will be noticed some of the representatives of the Royal Aero Club, including Mr. J. T. C. Moore-Brabazon, Mr. V. Ker-Seymer, Mr. Frank McClean, Mr. Griffith Brewer, Mr. G. Stanley White, Mr. Harold E. Perrin (Secretary), and his assistant. Other clubs represented were Austria, Belgium, France, Germany, Italy, Norway, Russia, Sweden, Switzerland, and United States.

PROGRESS OF FLIGHT ABOUT THE COUNTRY.

NOTE.—Addresses, temporary or permanent, follow in each case the names of the clubs, where communications of our readers can be addressed direct to the Secretary. We would ask Club Secretaries in future to see that the notes regarding their Clubs reach the Editor of FLIGHT, 44, St. Martin's Lane, London, W.C., by first post Tuesday at latest.)

Aldershot Model Aero Club (116, VICTORIA ROAD).

THIS club was successfully inaugurated on October 13th by Mr. T. Morton, under the presidency of Mr. S. F. Cody, Mr. D. W. A. Barton, son of Dr. Barton, the well-known inventor of the airship which bore his name, becoming Vice-President. The membership already exceeds fifty. A workshop has been fitted up for the use of the members, and several models and a full-sized glider are under construction. It is proposed to hold a model competition at an early date, particulars of which will be available shortly.

Anyone desirous of becoming a member is invited to apply to Mr. M. Dudding, hon. sec., at the above address, from whom all particulars may be obtained.

Boys' Aero Club in Johannesburg.

BOYS interested in flight and resident in the Johannesburg district are requested to communicate with Mr. Harry Goldstein, 6, Klein Street, Johannesburg, S.A., who is trying to start a boys' aero club in that district.

Conisborough and District Model Ae.Soc. (18, CHURCH ST.).

A COMPETITION will be held, as soon as sufficient entries have been received, for the best flight of a model made by a member under 17 years. The prize will be a silver medal, and the entrance has been fixed at 3d. for each model. As it gets dark very early now, the sooner the entries are received the better. A workshop is being negotiated for, and as soon as it is settled the work of constructing a glider will be commenced by the members jointly, and it is hoped to make experiments before the end of November. As several members have had experience with gliders of their own, it is hoped the "joint" one will be very successful. The next meeting takes place on Friday, November 4th, at 7 p.m., at the above address.

Kite and Model Aeroplane Assoc. (27, VICTORY RD., WIMBLEDON)

In December, Major B. Baden-Powell, F.R.A.S., will give a lecture on "Kites."

On January 9th Mr. V. E. Johnson will take as his subject "The Gyroscope as Applied to the Control of Aeroplanes," illustrated by numerous lantern slides and experiments.

During February, on dates which will be arranged later, Mr. G. Marconi will read a paper, "Wireless Telegraphy and Kites," while Mr. C. Krüger will lecture on the "Ship to Shore Problem, or Kites as the Best Means of Establishing Communication between Ship and Shore."

Members will be notified of the dates of these meetings as soon as fixed.

A Model Aero Club for Lincoln.

THERE are a large number of people interested in aviation in Lincoln and the district, and several of them have expressed a desire that a model club should be formed. The initiative is being taken by Mr. H. B. Herbert, of 34, Monks Road, Lincoln, and any of our readers in the district who are interested in the idea should communicate with him, so that he may arrange for a meeting.

Northumberland and Durham Ae.C. (ROYAL TURK'S HEAD HOTEL, GREY STREET, NEWCASTLE-ON-TYNE).

THE annual general meeting took place on Wednesday, Oct. 27th, at the headquarters of the club. The President, the Hon. Chas. Parsons, C.B., presided, supported by a number of vice-presidents. There were about eighty members present.

The report for the past year and the balance sheet were passed, the latter showing a substantial and satisfactory balance at the bankers. The officers and Committee were all re-elected.

An announcement was made that it was more than probable a very suitable ground would be found, for the use of the club members, at an early date.

During the past year the ground in use has not proved very satisfactory.

Included in the winter programme is the anniversary dinner, and a series of lectures and papers, Professor Stroud, a Vice-president, having consented to lecture on "Wireless Telegraphy," early in January. The dates to be arranged without delay.

A hearty vote of thanks was passed to the President for the large amount of work he had already done on behalf of the club, and he replied in a few well chosen words.

At the close, a splendid display of aviation pictures was given by the Travers Cinematograph Co., Ltd., which were much appreciated by those present.

Paddington and Districts Aero Club (2, EDEROKE ROAD, W.).

A LARGE crowd assembled to witness the competitions held by the club in the Paddington Recreation Ground on Saturday last. This proved very unfortunate, as the spectators kept crowding on to the course and so impeding the competitors and making the duty of the officials anything but an enviable one. It was the club's first attempt to hold such a competition, and it is hoped that the competitors will make due allowance for the unforeseen circumstances which ensued. There were 38 entrants, and of this number over 90 per cent. took part in the various events. The results were:—

Event 1, longest straight flight for models under 2 ft. 6 ins.—1. Mr. Davies (Twining monoplane), 650 ft.; 2. W. H. Sayers (Ding Sayers monoplane), 350 ft.; 3. R. R. Drake (Drake monoplane), 335 ft.

Event 2, longest straight flight for models over 2 ft. 6 in.—1. J. Spice (Spice flyer), 625 ft.; 2. C. Davies (Twining monoplane), 600 ft.; 3. Bragg Smith (Bragg Smith aeroplane), 250 ft.

Event 3, Point-to-point race.—1. J. Spice (Spice flyer), completed in three stages; 2. F. Mann (Mann monoplane), six stages; 3. W. H. Sayers (Ding Sayers monoplane), seven stages.

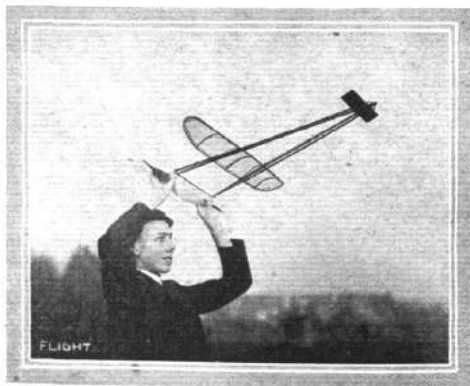
The club Silver Challenge Cup, which remains the property of the club until won by a competitor three times, was awarded to Mr. Spice for the best all-round flight of the meeting. Apart from the competitors mentioned there were several others who deserved credit for their splendid flights under very adverse conditions. It might be mentioned that the cross currents of air, caused no doubt by the sloping roofs of the houses which surrounded the recreation ground, were very trying.

Sheffield & District Ae.C. (22, MOUNT PLEASANT RD., SHARROW)

THE first annual general meeting of the club will be held, on November 15th, at the Wentworth Café, Pinstone Street, Sheffield, at 7.30 p.m. prompt. Members who are in arrears with their subscriptions should communicate at once with the treasurer, Mr. Harry M. Pashley, Ecclesall Road. Members will receive particulars of the meeting by post at an early date.

Yorkshire Aero Club (HOTEL METROPOLE, LEEDS).

MODEL makers in Leeds and the neighbourhood will be pleased to learn that Lieut.-Col. J. Walter Stead, 7th West Yorkshire Regiment, Leeds Rifles, has been good enough to permit the Model Section of the Yorkshire Aero Club to use the Drill Hall, Leeds. This section of the club is a very growing one, and the secretary will be pleased to hear from anyone interested in the flying of models. The best thanks of the members are due to Lieut.-Col. Stead for his encouragement and help.



PADDINGTON AERO CLUB MODEL CONTEST.—R. F. Mann, of the Arundel House School Aero Club, who gained the second prize in the Point-to-Point Race, launching his model.

FROM THE BRITISH FLYING GROUNDS.

Royal Aero Club Eastchurch Grounds.

On October 19th Mr. Charles Jobling took out his monoplane for a trial flight at Eastchurch. After a short run the machine rose easily to a height of over 30 ft. Owing, however, to an inside wire strainer having been broken before the start, the wing gave way after a flight of about 130 yards, and the plane dived to the ground. Mr. Jobling fortunately sustaining no injury. The monoplane, a diagram of which appeared in our issue of October 1st, is controlled entirely by ailerons of unusual length; it has no tail, and the pro-

pellor is behind. It has been built throughout of English materials to Mr. Jobling's design, and was driven by a 35-h.p. British de Havilland engine.

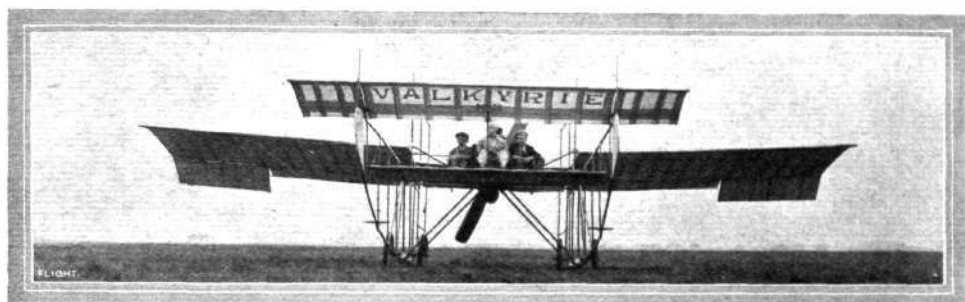
Brooklands Aerodrome.

OWING to high winds, the little colony at Brooklands was very quiet until Friday, when at 10 a.m. Mr. Low brought out the Bristol-Gregoire biplane, and in the brief interval between the ceasing of the rain and the rising of the wind succeeded in making a turn. The Gregoire motor, which with the radiator weighs 440 lbs., has now been well tuned up, and M. Edmond completed a circuit of the course. In the afternoon Lieut. Maitland made several straight-line flights on the machine; straight-line flights on Lane's Blériot were also made by a pupil. Mr. Sopwith also ventured out, the repairs, owing to his recent smash, being completed; but he contented himself with some rolling practice. The Avro plane made a circuit, piloted by Mr. Roe, with Mr. Rixton, a

Maitland and Mr. Low put in a little practice on the Bristol-Gregoire biplane.

Sunday proved another blank day and Brooklands looked desolate and deserted.

Monday morning, Mr. Low and a pupil made short flights. After lunch, Captain H. F. Wood (9th Lancers), who has joined the Bristol School, after two turns with Mr. Low, showed such readiness that he was put up by himself, and did a dozen straight line flights, rising occasionally to 6 or 7 ft., in a wind of 5-8 m.p.h.

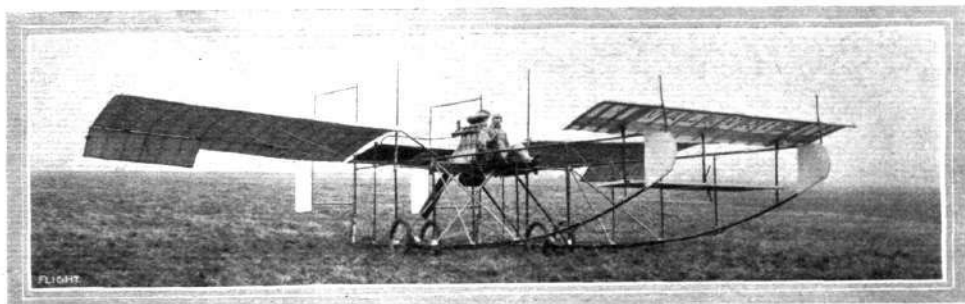


The new 3-seater "Valkyrie" at Hendon flying grounds, from the front.

M. Edmond then brought out the Bristol No. 11 (Gnome motor) and, after a trial flight, took Lieut. Maitland, Capt. Wood and Mr. Low for passenger flights, ending each time with a *vol plané* from 50-60 ft. Later, Lieut. Maitland covered the whole length of the course in very steady straight line flights, in a cross wind of 5 or 6 m.p.h., showing a marked advance in proficiency. In the evening, Mr. Watkins, on the Howard Wright biplane, was up for a 10 minutes' trip. Grahame-White's British-built Farman and the Spencer-Stirling biplane made short runs, but neither left the ground. Mr. Martin was out on the Martin-Handyside monoplane, making some good flights of about 300 yards. This was its first appearance after a bad smash some time ago.

Dunstable Park.

FOR many weeks past the flying grounds of the Midland Aero Club at Dunstable Park have been the scene of continual activity. Several club meetings have been held, and flying practice has been



A half side view of the new 3-seater "Valkyrie" at Hendon.

pupil. Mr. Roe found the controls much more sensitive with his new pigeon tail than with the triplane tails, and several times only just avoided a smash.

Mr. Watkins, flying the Howard Wright biplane, made several turns.

In the early hours on Saturday morning, Mr. Oxley, one of the Roe pupils, met with a bad smash. After a short flight he brought the machine down from a height of about 12 ft. too suddenly, with the result that the machine dug its nose into the ground and the body broke off at the seat, but fortunately Mr. Oxley was thrown clear and escaped injury. The machine appeared a perfect wreck, but apart from the propeller, body, and a bent crank-shaft, the damage was not so serious as was at first anticipated.

A stiff breeze kept most machines at rest during the remainder of the day, although Mr. Sopwith ventured a few hops, and Lieut.

indulged in on most days of the week during October. At present there are four machines on the ground, Mr. Holder's Humber-Blériot; the Star monoplane; Mr. Mann's all-steel Jap-engined monoplane; and Lieutenant Seddon's huge tandem biplane.

On Saturday week the club held a flying afternoon under excellent weather conditions and between three and four hundred people watched the experiments. Mr. Holder came out first, and after making a few flights his petrol pipe broke near the tap, which temporarily put him out of action. Mr. Bradshaw brought out the Star and made numerous flights during the afternoon. Once he tried to take up a passenger, but although the machine hopped a little it would not support the extra load. The "Star" at present is fitted with a Star 30-h.p. engine, but a 40-h.p. of the same type and make is being fitted. This we understand develops over 50-h.p. on the brake with ease.

Mr. Mann brought out his monoplane, which now has a Blériot tail fitted in place of the non-lifting type formerly in use. The machine made several hops, but the engine, which is a four-cylinder air cooled Jap of 18-20-h.p., was not exerting enough pull, and it is doubtful if it is powerful enough to fly the machine really well.

Later in the afternoon Mr. Holder managed to repair his petrol pipe, and rising to a height of 50 ft. executed a splendid sharp turn, which concluded the day's flying.

The Seddon biplane, about which little has been heard lately, is still in the hands of a large staff of mechanics, who are finishing off the thousand and one little items which crop up in the final stages. Lieut. Seddon's leave unfortunately expired just before the machine was ready for testing, but he hopes to be back again in a few weeks' time, when we may hear more of this interesting machine.

On Saturday, the 29th ult., Mr. Holder and Mr. Bradshaw came out in the rapidly diminishing light, and made a few flights across the ground, but as a mist was settling, and neither of them could see the other, straight flights only were attempted.

The Star Engineering Co. have a biplane of the Farman type nearly completed, which will be on the flying ground in a few weeks' time.

Hendon Aerodrome.

DURING the past week, owing to the stormy weather, work, like in other flying grounds, has been quiet.

Messrs. Everett and Edgcombe's experimental monoplane came out after a long interval of reconstruction, but unfortunately broke a wheel and retired for repairs.

Captain Hinds Howell's Howard Wright monoplane has not been out this week.

Mr. Prier (instructor of the Blériot School) was unable to fly last week owing to a rather serious injury to his hand caused by tearing off his nail whilst removing his overalls. However, he was sufficiently recovered to give some fine exhibitions on Monday, 31st ult. These flights were carried out in a gusty wind and were remarkable for some turns of unusually small radius, and as usual for very neat and finished *vol plans*. Mr. Weir (a pupil of the Blériot School) during his third lesson succeeded in rising off the ground and alighting successfully and in his fourth lesson made several good flights of practically the whole length of the ground. We understand that so far he has had no breakage.

The Aeronautical Syndicate's passenger carrying "Valkyrie II" was out for rolling practice and testing on Monday afternoon. We understand that two similar machines to "Valkyrie I" are well on the way to completion.

New Forest Aviation School.

THOUGH the wind has been somewhat boisterous, the general weather conditions have slightly improved during the past week, and pupils at Beaulieu have had a few more opportunities for practice than during the previous week. On Monday afternoon Major Cook made an excellent circular flight, covering nearly 3 miles at an altitude of about 60 ft. Considering that this was his first complete circuit, and a tricky wind of over 10 miles an hour prevailed, he maintained excellent control, and did quite enough to prove that his pilot's certificate is only a question of getting favourable weather for the tests.

The competition between Barrington Kennett and Cook as to being the first pupil at Beaulieu to gain a *brevet* (and with it the cup offered by the principals) is now extremely keen, and either probably will succeed in the course of a few days. Wilson is not going to be long behind them, and Poggioli is also well on the way to the desired end. Kempton Cannon commenced "rolling" this week and shows extreme keenness.

Salisbury Plain.

ON Monday Mr. Hammond was out and did some flying at a considerable height for about ten miles. Mr. McDonald, one of the pupils, then took out the learner's machine, and made a long flight over Stonehenge and back to the hangars, finishing with a very good landing. Mr. Hammond was out again later and flew over the Army monoplane, which was lying on the ground, having come to grief, and then went on towards Devizes, flying for a considerable distance at a height of about 1,500 ft. Mr. McDonald was also up again, and after making a flight of about 5 miles around Stonehenge, at a considerable height, he returned at the same time as Mr. Hammond, and both machines from different directions came down opposite the hangars, making excellent landings. In a subsequent trip Mr. McDonald was flying at a height of about 200 ft., and making a most excellent show for a pupil. There seems to be no doubt that the pupils on the Bristol machines make very rapid progress, and are able to get through their course within a few weeks.

HOW I LEARNT TO FLY.

By MAURICE DUCROCQ.

As an aviator I occupy a unique position. Accident of birth has made me a Frenchman, accident of business has kept me in England; the result of these two accidents and an intense desire to conquer the air has been that I am the only Frenchman who has



M. Maurice Ducrocq, the first Frenchman to learn to fly at a British aviation school and to secure the Royal Aero Club's pilot certificate.

taken his pilot's certificate in this country. From start to finish I have accomplished my desire in twenty lessons, and I greatly doubt whether France, far in advance as it is of England, could have served me better. I ought to add here that, before my first lesson, I had never been in an aeroplane and had had no previous experience on gliders or oscillators, and, perhaps also, that I came into the practical part of the business with an open mind and a good deal of determination.

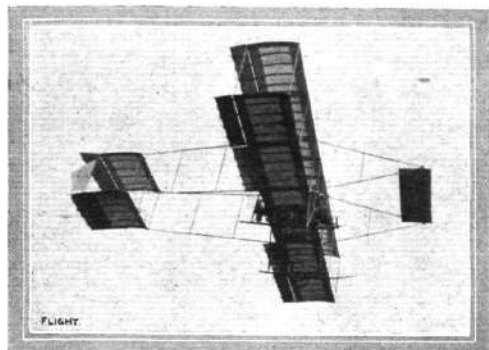
I began operations by a close survey of all schools and so-called schools of aviation in England. I mention no names, but there is no harm in saying that last August there were no schools actually in being within easy reach of London. One there was which had neither aeroplane nor pilot; another had an aeroplane but no engine; another had an engine but no pilot; another, even others, had insufficient engines, or planes which declined (very properly) to take the air. All this was most unsatisfactory to my mind. I was prepared to pay and pay well for instruction, but not for nothing. Then by accident on the telephone I heard that a man had produced a Farman at Brooklands, had started the Gnome, that capricious spinning monster, at the first turn of the propeller, and made a fine flight. This I heard was his debut in England. Having made enquiries I went to M. Blondeau at Brooklands with my desires and proposals.

I found that he was in partnership with Mrs. Hewlett, whom he is also teaching to fly, and that they were prepared to teach me from that moment. My lessons began immediately, with the result that I passed the Royal Aero Club tests for my pilot's certificate on October 21st in a wind varying from 12 to 20 m.p.h.

The method is simple, and the manner of tuition is quiet and sympathetic.

M. Blondeau is a Frenchman, but speaks English, and has lived several years on this side of the Channel. He has had eight years in the construction of motors, and drove one of his own make in the Paris to Madrid race. He went over to the Farman School last January with Mrs. Hewlett, and while learning there he spent his time in the workshops, actually working himself. He also studied the Gnome near Paris. He is a very quiet man, hardly ever making

a remark unless it is asked for; he neither loses his head or his temper. He can't be made to hurry. It was quite a joke at the Lanark meeting; the officials found out that it was no good "fussing round," so they let him alone to come out when he was ready.



M. Blondeau flying at Brooklands with his French pupil, M. Ducrocq, on his Henry Farman.

When he first came to Brooklands there were not many who flew out daily as they do now, and the older dwellers of the place were inclined to be patronising; they told him the Gnome didn't like the air of Brooklands, that the eddies were very bad and dangerous, and that a Frenchman had been there three months, and then left

because as a flying ground it was a death-trap. M. Blondeau, like Brer Rabbit, "kept on saying nuffin." He is not a showy pilot; he never does things to amuse the public, but he loves flying on his own machine, as he is certain that the motor and the plane are as safe and true as they can be made, in every detail. He leaves this to no mechanic; he has none. He does all tuning up himself, and verifies every wire.

His method of teaching is as follows: Every morning or evening, as the wind may allow, the pupil is taken up. He has all he can do to sit tight and keep his raptures to himself for the first two or three days. The engine purrs like an enormous cat, but with the regularity of a clock; there is a rush along the ground, then a steady lift, when one becomes insensible to speed, conscious only of a strange exhilaration and an ampler air. For my first lesson I was deliberately taken to a considerable height and across country, for, as was explained to me afterwards, it is good that the pupil should lose any sense of fear he may have and learn the possibilities of his new and wonderful faculty. After two or three days' experience of the sort, when my ecstasies were sobered down and my pulse steadier, I was taken day by day round the course at a lower altitude, for by now I was prepared to give my attention to the machine and its working rather than to my own sensations. After three or four lessons, I was allowed to touch the lever and let the machine "feel my hands," and then it was that, with that lucidity and absence of fuss which marks Blondeau out as a born teacher, he taught me all I now know. After eleven lessons I began to fly in straight lines up and down the aviation ground, at first skimming the ground, then leaving it for short bouts, lastly in the air. In twenty-one lessons I was passed by the Aero Club. I do not hesitate to say that I could not have been taught better or more economically in England or anywhere else. I should be more than ungrateful if I did not testify to M. Blondeau's efficiency and patience, and I think I may add that I am the first pupil of any aviation school in this country to qualify by examinations, and that certainly I am the first at Brooklands.

BURTON AVIATION MEETING.

LAST week we gave some published figures bearing upon the financial aspect of the Burton Aviation Meeting, and these apparently showed a balance of profit of about £263, with which we reported a gold chain of office for the present and future Mayoresses, and other souvenirs, were to be acquired. In addition, we asked where the promoters of the meeting came in, over their profits, &c. In response we have received a letter from Messrs. Talbot, Stein and Evershed, of Burton-on-Trent, Solicitors for the Local Committee, in which they state that the paragraph in question is calculated to cause, and has, in fact, already caused, considerable misapprehension in the minds of some people who, like ourselves, are unaware of the true facts of the case. They continue as follows:—

"The aviation meeting held at Burton was organised by a London syndicate—Aviation Courses, Ltd. For the use of the necessary land they paid to a local committee a fixed rent of £300, out of which such committee had to pay certain sums for fencing and so on. The balance sheet, which was read at the meeting to which you refer, related to this sum of £300, and it is out of the balance of this

fund that the souvenirs to which you refer are being provided. We might mention that the figure you mention as being the balance is quite wrong. The local committee have nothing whatever to do with the profits arising from the meeting itself. This is a matter entirely for Aviation Courses, Ltd."

We are extremely glad to have this very clear official statement, and we are indeed sorry if there has been the slightest misapprehension caused by our paragraph, as not the smallest reflection was intended upon the Burton Local Committee or anybody else. We simply did not, as we said, understand the position from the figures and statements published, and our surmise was that the real state of affairs had apparently, for some reason, not been lucidly explained. The Burton Local Committee's position is now made quite clear, and we are indeed pleased, and congratulate them upon their extremely business-like arrangements, which enabled them not only to have a splendid exhibition of flight for the town, but also to secure for all time a substantial reminder of so historic an event.

CONTINENTAL MEETINGS.

The Brussels Meeting.

ALTHOUGH the weather during the past week has not been all that might have been desired, quite a good deal of flying was seen at the meeting at Brussels. The competitors were not very numerous but they gave good demonstration flights whenever the weather was suitable and on several days the dirigible "Ville de Bruxelles" cruised over the Etterbeek flying ground and on the 26th ult. it was out for over two hours and a half. There was a good deal of variety too among the flyers, who included Lafont on an Antoinette, Petrowsky on a Sommer, Tyck and de Caters on Blériots, de Ridder on a Voisin and Madame Neil and Koehlin on Koehlin monoplanes. Saturday was a blank day at the aerodrome on account of the thick fog.

Flying Meeting at Liege.

DURING the last week of October a flying meeting was held at Liege, and although no very extraordinary flights were seen, the large number of people who visited the aerodrome had plenty to interest them. The aviators included Parisot on a Henry Farman, Renaux on a Maurice Farman, Barra on a Blériot, Count Robillard on an Antoinette, and Vidart and Martin on Hanriot monoplanes. Perhaps the best flight seen during the week was that of Parisot on his Henry Farman machine on the 27th ult. when he covered 82 kilometres in 59 mins., passing meantime over the Meuse Forts, &c.

PARIS TO BRUSSELS AND BACK.

UNDETERRED by his unsuccessful attempt some days ago for the Grand Prix of the Automobile Club of France, Michel Mahieu flew over from Etampes to Issy on the 27th ult. On the following day the Farman machine was got ready once more, and with De Manthe occupying the passenger's seat, Mahieu set off at half-past twelve on his second attempt to fly to Brussels and back. After making satisfactory progress the aviators landed at 3 o'clock at Dravecy, on the Belgian frontier, in order to replenish the fuel tanks. A quarter of an hour later they were on their way again, and succeeded in getting as far as Braine-le-Comte, about 18 miles from Brussels, where they landed at a quarter past five. During the last stage of the journey the flyers were much bothered by the strong side wind, and they, therefore, decided to stay the night at Braine. At 7 o'clock the next morning a fresh start was made, and Brussels reached within 25 minutes, the landing being safely made on the Etterbeek Plain. After resting for two hours and a half the aviators determined to start again for Paris, but the wind proved to be too much, and Mahieu did not succeed in getting his machine properly launched in flight. After a delay of an hour and twenty minutes Mahieu tried to make another start, but after circling the ground four times, came down at a third attempt. Mahieu started off alone, but as he could not get the machine to rise above 30 metres, he decided to give up his attempt to get back to Paris.

THE DAVIDSON GYROPTER.

NEAR Taplow, on the banks of the Thames, there is being built a huge machine of the helicopter species, which its inventor, Mr. G. L. O. Davidson, calls by the name "Gyropter." It is unfinished, and it is likely to remain unfinished unless others who are as interested in this particular problem as Mr. Davidson himself come forward to his financial assistance. Judging by much of the correspondence that we have received, however, there still remain a very large number of people dissatisfied with the prospects of the modern aeroplane, who consider that a flying machine is no flying machine at all unless it possesses the capacity of direct vertical ascent. Now is their opportunity to have the courage of their convictions by spending money in practical tests. Let us not be misunderstood when we say this. We are far from advocating the principle of the helicopter as a flying machine, but we do believe that it might be to general advantage to have some sort of practical demonstration with a helicopter on such a large scale. Even at the worst nothing teaches so much as a failure, and Mr. Davidson is confident of success; for these and other reasons there may at least be some who are willing to see this thing as far as a preliminary experimental stage.

For our own part we should welcome nothing better than to have a test with a large lifting screw carried out, and we feel sure that it would be of the greatest possible assistance to the vast crowd who so repeatedly cry out that an ounce of practice is worth a ton of theory. So far as throwing in their lot with Mr. Davidson is concerned we suggest this merely on the score of economy, for there is one point in theory wherein theorists and would-be practitioners are agreed, which is that a lifting screw to be of any use must be very large. It follows, therefore, that experiments on a small scale are not much use, and it goes without saying that experiments on a large scale cost much money. Those who have no desire to spend very much money, but have, nevertheless, an intense anxiety to see their faith in the helicopter vindicated, or otherwise, might just as well combine forces, for it will be the cheapest thing in the long run. Mr. Davidson's machine is fairly far advanced, further advanced in some parts in fact than is strictly necessary for the carrying out of such preliminary tests as ought to be proceeded with so soon as the means are available.

Each of the lifting screws on this machine measures 26 ft. 10 ins. in diameter, and it is not altogether an easy or cheap matter to construct a framework in which a device of this size can be readily tested under power. Such a framework exists in the skeleton of Mr. Davidson's gyropter, and we can at least say this much for the machine that the framework has been beautifully built by workmen who are experts in this sort of woodwork through their association with the building of light racing skiffs. The entire construction of the frame of the machine is built of sequoia, a Californian timber somewhat like good yellow pine in texture but rather like mahogany in colour. Lattice box girders extending from the central body are built entirely of this wood, and the workmanship throughout has been excellent. There are three pairs of such girders on either side of the body, and the central pair form the brackets for holding the vertical spindles of the lifting screws. These screws may be best described in popular language as being like umbrellas. This is due to the fact that the long narrow blades are initially curved downwards and hooped with steel rings so that they may better withstand the stresses induced by lifting the weight of the machine. Each umbrella screw will be driven from engines through bevel gearing of the Humphris type by special Stanley steam engines situated in the central body of the machine.

Incidentally, the gyropter as a finished machine will possess six pairs of outstretched aeroplane wings; in other words it will be a triple biplane and the horizontal thrust is to be derived by canting the spindles of the lifting screws slightly out of the vertical. With this aspect of the machine we are, however, not so much concerned at the moment as with the possibilities of the apparatus that already exists as a means of obtaining some sort of definite practical information about the action of a lifting screw on a very large scale. It may be remarked that the total weight of the machine when finally finished is estimated at not more than 7 tons, and it is proposed to use engines of a normal capacity of 50-h.p. for the purpose of flight, which, it may be observed, is a ratio of power to load of about one-fiftieth of that prevailing in the aeroplane of to-day, where a weight of about a thousand pounds needs much the same horse-power.

The point of view from which advocates of the helicopter principle are prone to regard the principles of this method of flight, however, is that of the engineer who makes calculations for a lifting crane. Thus it is argued that 50-h.p. expended crane-wise and without loss in transmission will lift 15,600 lbs. (7 tons) at the rate of 1.76 ft. per sec. The modern Blériot monoplane, with 7-cylinder Guome engines of 50-h.p., have demonstrated a capacity for ascent of

between 3 and 4 ft. per sec., or, say, the expenditure of 6-h.p. net per 1,000 lbs. of load. To compete with such a machine, the Davidson gyropter, weighing 15,600 lbs., would have to be prepared to use $(6 \times 15.6) = 93.5$ h.p. This is, of course, the net visible expenditure of power demonstrated by the vertical ascent of the machine at the rate stated, it makes no allowance whatever for the loss in transmission, nor for the power consumed in converting the fluidic air into a solid abutment capable of acting as a practical substitute for the crane chain.

This is the important point; the analogy of the crane would hold good by itself if there were indeed a chain to hang the machine on to, but there is no chain and it is in fact the principal duty of the helicopter screws, like the far famed Indian juggler in the rope trick, to make the air solid enough to initially support the load. Herein lies the difference between dynamic and static support. Bodies statically supported, as when resting on the ground or floating in the air, do not need to expend energy to maintain their position, but bodies that are heavier than air can only be dynamically supported in that fluid by developing power exclusively for that purpose, and the amount of power that is necessary to support a given load in equilibrium depends on the prevailing physical conditions.

A preliminary investigation is not without interest, and it costs little, even in the form of "Flight Manual," where this particular problem is treated among many others. If we turn to formula 102 therein it will be found that the discharge velocity of the air from the lifters must have a value

$$V = \sqrt{\frac{420 \times 15600}{1000}} = \sqrt{6550} = 81 \text{ ft./sec.}$$

to produce an upward thrust of 7 tons from a screw area of about 1,000 sq. ft. In these two streams of air there is a waste of energy amounting to $\frac{1000 \times (81)^3}{840 \times 550} = 1150$ h.p.

Even this value neglects the work done in overcoming the skin friction of the blades, and if we assume that skin friction is proportional to the square of the speed then the condition of minimum resistance obtains when the power expended thereon is equal to that used in producing the lift; that is to say, the net power consumed in the lifters works out at 2,300-h.p. Including losses in transmission efficiency might reasonably be supposed to bring the total up to at least 4,000-h.p. If, however, for the sake of analysis, we were to assume that the screws were direct driven, thus avoiding transmission losses, we have a ratio of 2,300-h.p. for a lift of 15,600 lbs., or 6.8 lbs. per h.p. It would appear, therefore, as if the diameter of the lifter on the Davidson gyropter, large as it is, is yet small compared with the load, for it is undoubtedly possible to get a higher practical efficiency than this out of a helicopter, and, indeed, Mr. Davidson himself has obtained, we understand, a lift of 75 lbs. per h.p. in previous experiments. Moreover, the mere estimate of discharge velocity would of itself indicate inefficiency, for centrifugal force puts a practical limit on the safe revolutions, and if we allow a speed of 600 feet per second on a mean radius of say 10 ft. 6 ins., even this value produces an effective pitch co-efficient exceeding .4, which is in itself high for a helicopter. If the pitch co-efficient is reduced in order to increase the lift efficiency, then the sum total lift will be inadequate to support the load, because it will not produce the requisite slip stream over the predetermined area upon which the lifters can alone operate.

These considerations are, however, purely theoretical and are not necessarily intended to be of any moment to those to whom theory is of no account. For them, as we have said, there exists the opportunity of making a practical trial with the Davidson machine for a reasonable expenditure of money. It ought not to cost so very much more to get one of these big lifting screws properly rigged up in the framework and the machine balanced in some way on a suitable support so as to measure the lift of one screw by itself. This would be a really useful thing to do because it would provide data that would be of value quite apart from its application to the Davidson gyropter in particular. It would be a means of finding out, for instance, what thrust it is possible to obtain with a lifting screw thus designed, and from the thrust and the power and the weights of the various members it is a very easy matter to see whether the whole scheme of the machine is plausible.

That an ordinary propeller, such as is used on an aeroplane, would be impracticable as a helicopter may be very easily foreseen from the fact that it only develops about 10 lbs. thrust per h.p., and it would be very difficult to make a complete flying machine weighing as little as this. By increasing the diameter of the propeller and reducing the velocity of the slip stream the thrust efficiency increases, but so also does the weight of such a propeller,

and the question is at what point, if any, does the increase in efficiency get the better of the load. The problem of the helicopter is rather elusive in its theory for this reason, and there is scarcely space to go into the subject fully this week, but in a future article

MR. NEALE TO BUILD A DIRIGIBLE.

MR. NEALE, whose name is already known to our readers in connection with the Neale aeroplane, comes forward this week in our advertisement pages asking our readers to place a sum of money at his disposal in order to build a dirigible. He has also submitted general calculations on which he has based his estimates of power required, and as these matters are presumably of interest to those who may be anxious to assist in the finance of the operation, we give herewith the following summary of the data provided:—

The envelope of the dirigible is of the rigid type and measures 600 ft. in length. It has a rectangular cross section 120 ft. in width and 40 ft. in height. The internal framework provides compartments for 34 spherical balloons each having a capacity of 33,510 cu. ft. From private experiments carried out on a small scale Mr. Neale calculates the resistance from an empirical formula of his own, which gives the following values:—

Speed (m.p.h.)	20	30	40	50	75	100
Resistance (lbs.)	600	1,620	2,880	4,500	10,200	18,000

One or two of these figures we have compared with the corre-

sponding values for skin friction that would obtain from the application of the chart published in **FLIGHT** on page 628, and the values appear to be more or less of the same order. The chart in question was based on Zahn's coefficient, and the single surface has been taken as equal to 200,000 sq. ft. From these values for resistance, the power required for different speeds has been based on an allowance of 7 lbs. thrust per h.p., a value that appears to be easily obtained with a modern propeller. The powers and speeds thus work out as follows:—

Speed (m.p.h.)	20	30	40	50	75	100
Power (h.p.)	94	231	411	643	1,457	2,571

It is proposed to use eleven 18 ft. propellers for driving the airship. The estimated weight is 74,286 lbs., of which there is an allowance of 600 lbs. for the crew and 36,000 lbs. for the petrol. The motors to develop 3,000-h.p. are estimated at 3 lbs. per h.p., which seems rather low. There is a scheme for warming the gas by passing the cooling water through radiators contained inside the envelope.

RULES FOR THE GOULD PRIZE.

IN response to several requests from our readers we have much pleasure in publishing below the full rules governing the prize of £3,000 offered by Mr. Edwin Gould through the *Scientific American* for the most perfect flying machine, fitted with two or more motors, capable of driving the machine independently. The rules are:—

1. A prize of \$15,000 has been offered by Mr. Edwin Gould for the most perfect and practicable heavier-than-air flying machine, designed and demonstrated in this country, and equipped with two or more complete power plants (separate motors and propellers), so connected that any power plant may be operated independently, or that they may be used together.

Conditions of Entry.

2. Competitors for the prize must file with the Contest Committee complete drawings and specifications of their machines, in which the arrangement of the engines and propellers is clearly shown, with the mechanism for throwing into or out of gear one or all of the engines and propellers. Such entry should be addressed to the Contest Committee of the Gould *Scientific American* Prize, 361, Broadway, New York City. Each contestant, in formally entering his machine, must specify its type (monoplane, biplane, helicopter, &c.), give its principal dimensions, the number and sizes of its motors and propellers, its horse-power, fuel-carrying capacity, and the nature of its steering and controlling devices.

3. Entries must be received at the office of the *Scientific American* on or before June 1st, 1911. Contests will take place July 4th, 1911, and following days. At least two machines must be entered in the contest or the prize will not be awarded.

Contest Committee.

4. The committee will consist of a representative of the *Scientific American*, a representative of the Aero Club of America, and the representative of some technical institute. This committee shall pass upon the practicability and efficiency of all the machines entered in competition, and they shall also act as judges in determining which machine has made the best flights and complied with the tests upon which the winning of the prize is conditional. The decision of this committee shall be final.

Conditions of the Test.

5. Before making a flight each contestant or his agent must prove to the satisfaction of the Contest Committee that he is able to drive each engine and propeller independently of the other or others, and that he is able to couple-up all engines and propellers and drive them in unison. No machine will be allowed to compete unless it can fulfil these requirements to the satisfaction of the Contest Committee. The prize shall not be awarded unless the competitor can demonstrate that he is able to drive his machine in a continuous flight over a designated course, and for a period of at least one hour he must run with one of his power plants disconnected; also he must drive his engines during said flight alternately and together. Recording tachometers attached to the motors can probably be used to prove such performance. In the judging of the performances of the various machines the questions of stability, ease of control, and safety will also be taken into consideration by the judges. The machine best fulfilling these conditions shall be awarded the prize.

6. All heavier-than-air machines of any type whatever—aeroplanes, helicopters, ornithopters, &c.—shall be entitled to compete for the prize, but all machines carrying a balloon or gas-containing envelope for purposes of support are excluded from the competition.

7. The flights will be made under reasonable conditions of weather. The judges will, at their discretion, order the flights to begin at any time they may see fit, provided they consider the weather conditions sufficiently favourable.

8. No entry fee will be charged, but the contestant must pay for the transportation of his machine to and from the field of trial.

9. The place of holding the trial shall be determined by the Contest Committee, and the location of such place of trial shall be announced on or about June 1st, 1911.



Mr. Robert P. Grimmer, the energetic Secretary of the Arundel House School Aero Club, with his favourite "Ridley" kite.

BRITISH NOTES OF THE WEEK.

Membership of Provincial Clubs.

IN connection with the statement under the Manchester Club notes in our last issue that their membership of 268 was claimed to be the largest of any provincial club of the United Kingdom, Captain J. H. Cooke, Chairman of the Midland Aero Club, writes to point out that his club has 475 members at the present time and that its annual subscription is 1 guinea with an entrance fee of 1 guinea.

The Difference in Five Years.

ON taking the chair at a conference of Aerial Leagues, held at Folkestone Town Hall last week, Mr. Rudyard Kipling said that if five years ago they "had met to discuss conditions for a flying competition across the Channel they would have been turned out of the Council Chamber for being a set of lunatics. Five years hence they would be discussing things more wonderful still. We are only at the beginning of a new world." The meeting devoted a considerable time to discussing the question of protective clothing for aviators, but Mr. Kipling pointed out that they were making conditions for a game which they did not understand. "The best test would be with a human being inside," but, as he pointed out, "people strongly object to being tested in that way from a great height."

Mr. Cody has a Lady Pupil.

FIRED with an ambition to become the first certificated lady flyer in the British Islands, Miss Amand Livet has just become a pupil of Mr. S. F. Cody. This young lady, who is not yet out of her teens, is very keen on the new sport and has plenty of pluck. She had her first flight on Monday with Mr. Cody, and although a 30-mile wind was blowing, a distance of 5 miles was covered over Laffan's Plain in a very satisfactory fashion.

The British Government and Aeronautics.

SOME interesting information as to the attitude of the British Government regarding aeronautics has been obtained by the *Daily Mail* in the form of authoritative replies to a series of questions. Three questions were asked regarding airships, and these, together with the replies, were as follows:—"How many airships is it the intention of the War Office to acquire in the comparatively near future?"

"The tests of the Clement-Bayard and Lebaudy vessels will largely govern policy in this direction. One or perhaps both airships will be acquired. Enthusiasts advocate the creation of a great aerial fleet, but caution is necessary before plunging into such expense.

"Will the construction of a large vessel of the Clement-Bayard or Lebaudy type be undertaken at Farnborough?"

"This will be decided by the results obtained with the two French airships. Should they prove a success from a practical military point of view it is intended to improve upon them, if possible, with a British-built ship.

"Is the training of airship 'crews' being proceeded with?"

"Yes. At every favourable spell of weather new men are being trained in the handling of the airship 'Beta,' at Farnborough. The French airships, if acquired, will be used largely as training ships."

Three questions were also asked regarding aeroplanes, and these, together with the replies, are set out below:—

"How many foreign-built machines are likely to be acquired in the near future?"

"The number cannot be stated, but it is intended to acquire one machine, of each successful type. Several machines have already been bought. English machines as well as foreign ones will be acquired.

"Are aeroplanes to be built at Farnborough?"

"Constructional work will be delayed until tests have been made with the aeroplanes purchased. It will then be attempted to design a new aeroplane specifically for military purposes.

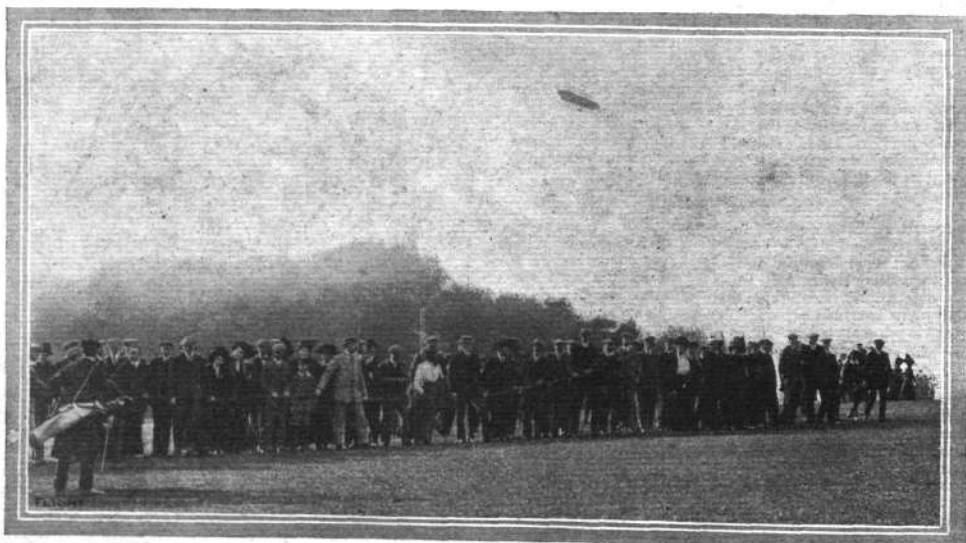
"Is a regular corps of trained pilots to be created?"

"Yes. Engineer officers are mainly to be engaged upon this work, but other officers who are specially devoting themselves to flying will also be given an opportunity."

It is added that most of the aeroplane testing will be carried out on Salisbury Plain, while Farnborough will continue to be the centre from which the airship trials will be carried out. With the three Army airships and the Clement-Bayard and Lebaudy dirigibles there now, it would appear that the present accommodation at Farnborough must be somewhat cramped.

A Blériot for the British Navy.

ACCORDING to a report from Paris, M. Blériot is said to have sold one of his two-seated monoplanes to the British Admiralty, and not only so, but to have already delivered it.



Recently we recorded the almost incredible fact that a football match was recently stopped in the Midlands to give everyone a fair chance of seeing one of the Doncaster-Burton aviators flying across country. If further proof were wanted that aerial navigation has come to stay, the above photo of the "Morning Post" national airship passing over the new golf course at Brighton upon its voyage from Paris last week should supply the evidence. It will be noted that there is actually one person in the crowd who has for an instant turned his eyes from Braid, who was putting, towards the dirigible. Truly this is another great achievement.

FOREIGN AVIATION NEWS.

Flying for a Quarter of a Day.

WITH the approach of the end of the year and the closing of the annual competition for the Michelin Cup, the competition for the world's duration record suddenly becomes active. We mentioned last week that Tabuteau had flown over to Etampes from Buc in order to spy out the land with a view to attacking the world's records. Everything was ready on Friday, and at 9 o'clock in the morning he started off on his Maurice Farman biplane. Around and round his course he flew for 6h. 1m. 35s., when he landed after having covered 465 kilom. (290 miles), about as far as from London to Carlisle. In the course of this trip his 8-cyl. Renault consumed 190 litres of petrol, and 20 litres of lubricating oil. The old world's record was that of Olieslaegers, who at Rheims flew 244'309 miles in 5h. 3m. 5½s.

New Rules for Pilot-Aviators, &c.

AMONG the matters discussed by the Federation Aeronautique Internationale at its meeting in Paris at the end of last week one of the most important was the subject of the conditions under which certificates as pilot-aviators should be issued by the various national clubs. The minimum age was fixed at eighteen years and it was decided that each applicant must fulfil three tests. Two of these will consist of covering a distance of not less than 5 kilom. over a closed circuit, while the third, which must be separate from the other two, consists of rising to a minimum height of 50 metres above the starting point. The course on which the distance events must be carried out will be marked by two posts placed not less than 500 metres from each other, and the course must be traversed in the form of a figure 8, that is to say if the first post is passed on the right hand the second must be passed on the left hand. Each flight must be ended by stopping the motor and planing down, while to be successful the candidate must stop his machine within 50 metres of a point previously designated by him. The conditions for balloon pilots have also undergone some revision, and in future those who desire to obtain such a certificate will have to make five ascents without any special conditions attached, followed by one of a minimum duration of one hour unaccompanied, and one night ascent. In the same way the conditions for airship pilots have been revised and in future candidates will have to be qualified for a balloon pilot's certificate, and then furnish proofs of having accomplished six voyages in a dirigible on different dates, in three of which the manoeuvres necessary for the ascent can be carried out under the direct control of the candidate.

French Inspector-General of Aeronautics.

WITH reference to the announcement made last week that the French Government had decided to appoint an Inspector-General of Military Aeronautics, the official appointment has now been made by General Brun, the Minister of War. The duties will be undertaken by General Roques, his appointment dating from the 29th ult.

Wiencziers Lost in the Fog.

LEAVING Johannisthal during the afternoon of the 28th ult. with the intention of flying to Bork in order to take part in some competitions there, Wiencziers lost his way, owing to being caught in a thick fog. Choosing the first suitable landing place he could see, he came down and found he was at the Sperenberg Camp, about 30 kilometres south of Berlin. On the following day he made a fresh start to reach Bork, which was about 40 kilometres from his landing place.

New Farman Machine.

ON Saturday at Buoy Mr. Henry Farman was testing two new fast machines, after which he made a short trip with one which has a greater span than the standard machine, and on this he carried three passengers. This performance he bettered on Sunday, when, during a short flight he took no less than four passengers for a short trial, the load transported, including petrol and oil, amounting to 380 kilograms.

Blériot School Moves to Pau.

ARRANGEMENTS have now been made for the transference of the Blériot School, usually carried on at Etampes, to Pau, where, as last year, the winter session will be spent. On Sunday last Dufloy, on a Gnome-engined Blériot, was flying for an hour and a quarter over the country.

The Morane Monoplane.

IN conjunction with M. Saulnier and the brothers Borel, Leon Morane had been for some months before his recent accident

working on a monoplane of his own design. At its first trial some days ago it was timed to attain a speed of over 100 k.p.h. The span is 9'8 metres, but the length is only 5'8 metres, while the weight, when fitted with a 50-h.p. Gnome motor is 195 kilograms. In general appearance the monoplane is reminiscent of Blériot practice, but the experience of Morane has led to many improvements in the landing chassis, the mounting of the motor, &c. The main planes are practically flat. Until Morane is able to test the machine himself, the monoplane will be piloted by Jacques de Lesseps.

Beaud and Mdle. Dutrieu at Mentin.

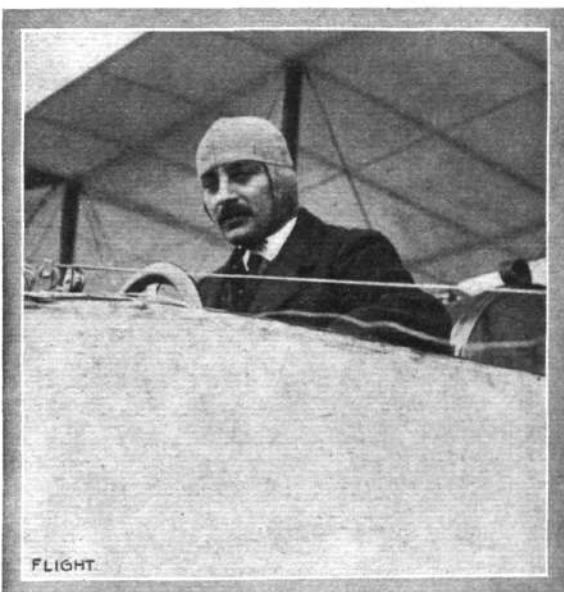
ON the two last days of October, Beaud and Mdle. Dutrieu were giving demonstration flights on their Farman biplane at Mentin, in Belgium, but none of the flights exceeded 12 mins. in duration. In some of them Beaud flew alone, and in others he was accompanied by Mdle. Dutrieu. It was announced that Mdle. Dutrieu will shortly go to America, in order to fill some engagements there.

From Bourges to Issy.

THE flying week at Bourges being over, the four who had taken the principal part in the flying made up their minds to fly back to Issy, and they set out in the following order—Bielovucic on his Voisin, Bregi also on a Voisin, Paillette and Blanchard, both on Blériots, bringing up the rear. Owing to missing his way, Paillette came down at Loches, but set off again almost at once in the direction of Orleans. There he found the mists very trying, and so decided to descend. The other three also stopped in the neighbourhood of Orleans, but were soon under way, and all reached Issy. Bregi was the first to arrive, and he landed safely and was congratulated by the Voisin Brothers on his achievement. A little later Bielovucic appeared, closely followed by Blanchard. The former made a satisfactory landing, but, as we have recorded elsewhere, Blanchard met with disaster in planing down.

Pyrenees Flight Abandoned.

OWING, it is stated, to the disastrous result of the competition for a flight across the Alps, the Bearn Aero Club have decided to withdraw their offer of a cup for a flight across the Pyrenees and to utilise the prize for a flight between Paris and Pau.



M. Tabuteau, who last week at Etampes, on a Maurice Farman machine, made the magnificent new world's record distance and duration flight in his flight for the Michelin 1910 Prize.

Tests with a Paulhan Machine.

SEVERAL very satisfactory trial flights were carried out on Thursday week at St. Cyr with a Paulhan machine of the new type. M. Louis Paulhan himself was in the pilot's seat, and during most of the time he kept the machine very close to the ground, but once or twice he rose higher and soared outside the limits of the aerodrome. Altogether, the machine seemed to behave very satisfactorily in the air.

Fatal Accident to Blanchard.

AT the conclusion of the week's flying at Bourges four of the aviators decided to fly back to Paris. Two of them, Bregi and Bielovucic, arrived safely at Issy, but Paillette stopped at Orleans. The fourth man, Blanchard, on a Blériot machine, reached Issy all right but when planing down from a height of about 30 metres the machine apparently got out of control and fell to the ground. Blanchard was thrown out and the machine fell on top of him, crushing his chest and inflicting such serious injuries that he died within a short time.

French Motorists and Aviation.

FOLLOWING the example of the Chevalier Rene de Nys, who is rapidly becoming expert both with the Maurice Farman biplane and the Tellier monoplane, the Marquis de Lareinty Tholosan, a prominent member of the A.C.F. Competitions Committee, has taken up aviation. He made his first flight on Friday last week with Herbster at the Maurice Farman School at Buc.

Who is the Youngest Aviatress?

So impressed was Mdle. de Lareinty Tholosan by seeing her brother fly with Herbster that she insisted on being taken for a trip. As this plucky young lady is only eighteen years old she was hailed as the youngest aviatress, but this claim is combated by a young friend of M. Sommer, Mdle. Madeleine Gibert-Lepage, who, although she is only twelve years old, has made several trips with M. Sommer on his biplane over the aerodrome at Douzy.

A Notable Tellier Pilot.

SPLENDID progress has been made recently by Prince de Nissolle, one of the pupils at the Tellier School at Etampes. After flying over the country round the aerodrome for some time at a height of about 200 metres on Friday of last week he landed at Ville Sauvage. After a rest of ten minutes he once more started his R.E.P. engine and set off back to the aerodrome, where he landed safely by a fine *vol plané*.



M. Michel Mahieu, with M. Gaston de Manthé as passenger, just before their start last week from Issy for Brussels in the Paris-Brussels 36-hour competition of the A.C.F.

Official Trials for Aeroplanes.

ALTHOUGH to most people it would seem to be early days to speak of reliability trials for aeroplanes, the French Aero Club have made up their minds to try and tackle the problem, and are now considering a proposal to test flying machines before they leave the constructor's hands and to issue a certificate as to the fitness of the machine.

Activity at Villacoublay.

DURING the last week or so there has been a good deal of flying at the ground attached to the French Wright factory at Villacoublay, where Count Lambert has been experimenting with a Wright biplane, on which the forward elevator has been dispensed with. On Saturday, accompanied by Gaubert, the Count flew over to Buc and back, and afterwards made a quarter of an hour's flight with a passenger over the aerodrome. On the 25th ult. Gaubert flew over from Villacoublay to Juvisy in 35 mins., and on the following day he successfully made the return journey.

Euler Beats German Record.

FLYING on his new biplane at the Military Parade Ground at Darmstadt, Euler, on the 26 ult., succeeded in beating the German duration record of 2 hrs. 40 mins. Euler's time was 3h. 6m. 18s., during which his altitude varied considerably between 10 and 18 metres.

From Bork to Johannisthal.

A LARGE crowd assembled on the Johannisthal aerodrome on Sunday afternoon to see the flyers arrive from Bork, which is 54 kms. away. Of the six entrants, only three started from Bork, and the winner proved to be Wiencziers, who completed the course in 41 mins. 10 secs. Grade was second in 53 mins. 30 secs., and Thelen third in 56 mins. 15 secs.

An Airship Stowaway.

DURING a voyage of the "Parseval VI" on Thursday afternoon last week with a full complement of passengers on board, the captain was surprised to notice a movement under a tarpaulin cover spread over the petrol tank. Presently a man appeared from underneath, and explained his presence by saying that he had been employed in the aerodrome and had had a great longing to experience the delights of a trip with the vessel, but saw no chance of gratifying his desire except by the methods he adopted.

German War Office Order Five Aeroplanes.

ACCORDING to a despatch from Berlin, the German War Office has decided, as a result of the recent tests carried out by the military authorities, to buy five aeroplanes of different types, including a Wright, an Aviatik, a German-built Sommer, a German-built Farman, and an Etrich monoplane.

Proposed Berlin-Vienna Race.

THE Austrian A.C. has proposed to the Kaiserlicher A.C. that the two clubs should combine in organising a cross-country flying race between Berlin and Vienna next year, the competition being limited to aviators of Austrian or German nationality. Local committees are being formed at the various points along the route with a view to assisting in the organisation.

Fatal Accident to an Italian Officer.

LAST week was a very black one in the history of aviation, no less than four aviators meeting with fatal accidents. The last of the series occurred on Thursday, when the victim was Lieut. Saglietti, who fell from about 50 feet at the Centocelle Aerodrome, near Rome. The officer had made a good flight, and was planing down, when, at a height of about 50 feet from the ground, the machine refused to respond to the adjustment of the elevator. Lieut. Saglietti tried to jump clear of the machine, but fell, and the machine crashed on top of him, killing him instantly.

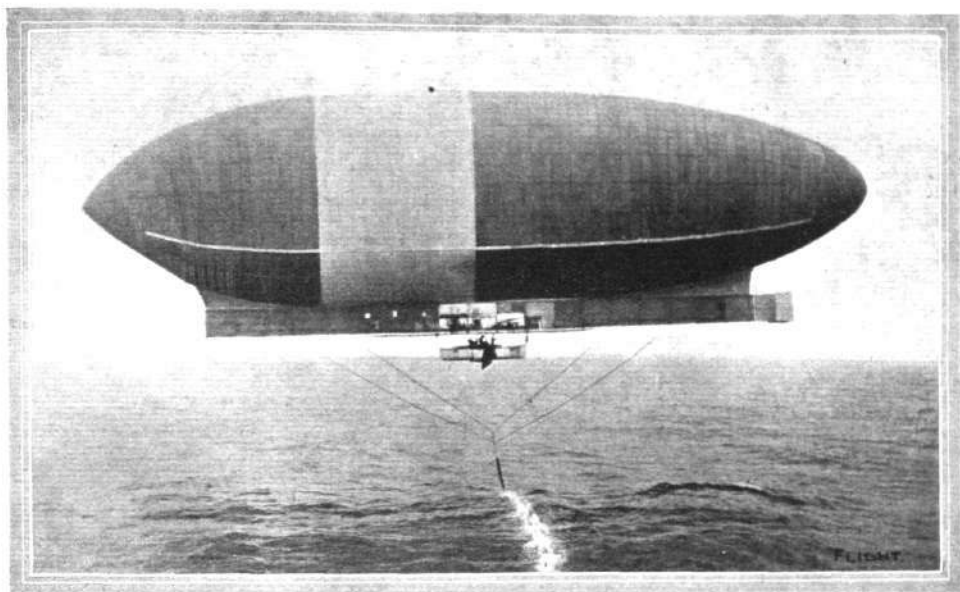
OUR SPEED-ALARM COMPETITION.

Further letters, accompanied by descriptions and drawings, for the Speed Alarm Competition are acknowledged from:—

H. Warrington.	G. Blallock.	F. Boardman.
G. Boocock.	Thos. McLean.	R. L. Pearson.
G. Jones.	E. Jones.	R. H. Childs.
Leslie C. Kemp.	Barton Mott.	Howard Wood.
S. Walker.	G. H. Hall.	O. J. Marstrand.
F. J. M. Boden.	W. J. Lovell, Jr.	G. B. Howarth.
F. S. Wates.	H. Noblet.	C. H. E. Ridpath.
M. C. Vyvyan.	J. F. Alcock.	J. F. Miller.
A. L. Griffiths.	Miss C. de H. Benest.	B. Churcher and F. C. Gibson.
J. F. Starbuck.	H. W. Pook.	C. L. Walker.
D. C. Holmes.	"Imperdable."	W. L. Dunbar.
H. M. Charles.	Thos. Fogg.	
W. J. Stallam.	T. B. Ringwood.	

This competition is now closed.—Ed.

AIRSHIP AND BALLOON NEWS.



WELLMAN AIRSHIP VOYAGE.—The airship "America" just before the "Trent" approached; the crew in the lifeboat signalling the "Trent." Note the "track" of the airship's trailer in the sea.

"Clement-Bayard II" Bought by the War Office.

! THE balance of £5,500 to make up the sum of £18,000, which was the lowest price which M. Clement would accept, was put up by Mr. Harvey Du Cros, and thus after the lengthy correspondence between the Parliamentary Aerial Defence Committee and the War Office, the airship "Clement-Bayard II" has become the property

of the Government for the £12,500 offered by them. The airship was originally offered to the Government for £25,000, but the Army Council replied that they could not offer more than £17,000 subject to the airship passing certain tests. To this M. Clement replied that he would sell the airship with a new envelope but without test for £18,000. The British Government, however,



WELLMAN AIRSHIP VOYAGE.—The crew of the airship "America"—not forgetting the "mascot" cat—after their rescue from the derelict dirigible.

refused to accept this, and offered a sum of £22,000 with the new envelope and £18,000 with the old envelope after tests. A third offer was made by the War Office of £12,500 for the airship without tests, and this was accepted by the Parliamentary Aerial Defence Committee, who undertook to raise the balance by private subscriptions. On hearing of these developments, Mr. Harvey Du Cros stepped into the breach and offered to pay the balance. The airship was taken over on Saturday morning by Lieut. Reynolds and a party of engineers, and at the beginning of this week the envelope was deflated and arrangements made to transfer the airship by road by means of motor luries to Farnborough, where the envelope will be overhauled thoroughly before it is reinflated.

A New British Army Airship.

CONSIDERING the poor support which the Army authorities have heretofore received from the Government—thereby leading to the regrettable financial handicap to which we referred in our leading article of last week—it is really astonishing how well those who are in charge of the airship work at Farnborough have turned to good account the paltry funds with which they have been supplied. According to latest advices from Aldershot, another Army dirigible, to be designated the "Delta," is now almost ready for her trials. The envelope has been received at the balloon factory at Farnborough, and is now being fitted with the car. The envelope is nearly as large as that of the Clement-Bayard airship, and the vessel will be driven by 6-cyl. motors of the ordinary motor car type. The same system of propellers will be adopted as in the case of the "Gamma," in which, it will be remembered, the axis of the propellers can be altered, in order to exercise an upward or downward influence as well as a forward pull.

Trials with the Willows Airship.

ON Saturday night Mr. Willows had his new airship out for a trial spin, and sailed over from Wormwood Scrubs to Shepherd's Bush and back. On his return he expressed himself as very well satisfied with the behaviour of his craft, with which he hopes to pay a visit to Paris as soon as the weather conditions are favourable. The increased length of envelope has made a great difference to the dirigible. A similar flight was made on Monday night, when Mr.

Willows, accompanied by his mechanic, cruised in his airship over the neighbourhood of Wormwood Scrubs for about half an hour.

"Parseval VI" Sails to Kiel.

CARRYING 11 passengers "Parseval VI" left the Johannisthal Aerodrome on Friday morning last week and arrived safely at Kiel later in the day, after making an intermediate stop at Bordesholm. She has been chartered by the German Aeronautical Society, and will be stationed at Kiel for some time.

"Parseval VI" Smashes a Propeller.

DURING its recent voyage from Munich to Berlin a somewhat similar mishap befell "Parseval VI" to that which resulted in the wrecking of "Republique." While the airship was between Bitterfeld and Berlin one of the blades of the propeller snapped off, but fortunately it cleared the envelope and dropped to the earth. Some of the splinters pierced the envelope, but the damage was very slight and the airship was able to continue its journey to Johannisthal with the remaining propeller.

The Gordon-Bennett Balloon Race.

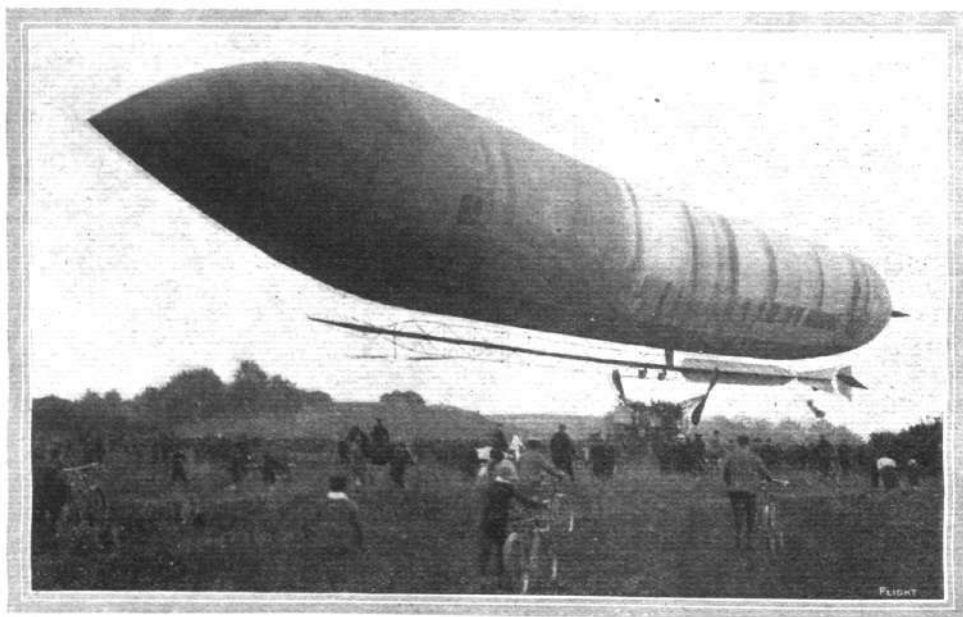
AFTER a week of waiting, the passengers in the American balloon, "America II," were heard from on Wednesday of last week, and it then transpired that, by having covered 1,355 miles, they had won the Gordon-Bennett Cup, and so it will remain in America for another year. The balloon descended on the slope of a densely wooded mountain about 50 miles north of Chicoutimi, in Quebec. Messrs. Alan Hawley and Augustus Post, the two occupants of the balloon, had a very exciting time in fighting their way back through the 50 miles to the nearest railway station. For three days they tramped on, and then fell in with some trappers, who guided them to St. Ambroise, and after resting there they were taken on to Chicoutimi. The official result of the race is now as follows:—

	miles		miles
America II (U. States)	1,355	Azurea (Switzerland)	772
Dusseldorf II (Germany)	1,230	Ile de France (France)	725
Germania (Germany)	1,190	St. Louis (U. States)	550
Helvetia (Switzerland)	850	Condor (France)	410
Harburg (Germany)	795	Million Population (U. States)	315

"MORNING POST" NATIONAL FUND AIRSHIP.

ALTHOUGH it is hoped that the airship will not be out of commission more than a month, it was exceedingly unfortunate that disaster should have fallen upon the *Morning Post* dirigible after making such a splendid journey from France. We were just

able to record in our last issue, very briefly, particulars of this voyage, and we now give them in fuller detail. Carrying eight persons on board, including M. Julliot, who was responsible for the design, M. Capazza, the chief pilot, M. Leon Berthe, second pilot,



"MORNING POST" NATIONAL AIRSHIP.—The moment of the arrival at Aldershot on Wednesday of last week of this splendid dirigible, built by Messrs. Lebaudy Frères.

MM. De Brabant, Boutteville and Lucas, engineers, Major Sir Alexander Bannerman, and the representative of the *Morning Post*, Mr. H. Warner Allen, the airship rose from her shed at Moisson at 10 o'clock on Wednesday of last week, and during the first stage of the journey followed the course of the Seine to Rouen, where the river was left, and the course continued straight on to St. Valéry en Caux on the French coast. This point was passed at 12 o'clock exactly, and with the two 120-h.p. Panhard engines working steadily, the English coast was soon sighted and the captive balloon at Brighton guided the dirigible on her way. The cross-Channel trip actually occupied 2 hrs. 18 mins., and an hour and ten minutes later, at 3.28 p.m., the airship was over Aldershot. The full journey of 197 miles, from Moisson to Aldershot, having occupied 5 hrs. 28 mins., the speed working out to about 36 miles an hour, which, considering the adverse wind conditions met with during part of the journey, was very satisfactory. When the airship arrived at Aldershot she was at a height of 1,600 ft., and the landing operations were rendered somewhat difficult by a 25-mile wind which was blowing, and she had therefore to tack several

times before she was finally got into position. However, this was eventually accomplished and then the work of getting her into the shed was started. Three-quarters of the envelope had already disappeared inside when the stern of the ship was seen to be rising, and before steps could be taken to rectify matters a projecting beam caught the fabric and tore a large hole in it. This allowed the gas to escape very rapidly and the fabric fell like a great yellow pall over the car. Several of the men who were handling the dirigible were covered by the fabric, but fortunately no one was injured. It is stated the rent will take about a month to repair. The car was a little strained through falling over on its side when the envelope collapsed and the propeller also was damaged, but this is not a very serious matter. During the journey 528 lbs. of ballast were used, sometimes in the form of water, sometimes in the form of petrol. During the journey 400 litres of petrol were used by the engines and on landing there were about 200 litres in the tanks and 990 lbs. of petrol was still held in reserve as ballast with 880 lbs. of water. The highest altitude reached during the trip was 2,120 feet, but during the cross-Channel trip the altitude was 200 feet.

AMERICAN NOTES.

The American International Meeting.

THE American International Meeting at Belmont Park, N.Y., did not prove the great success that was anticipated, and it was greatly to be regretted that the closing scenes of this first international meeting to be held in the States should have been marred by dissensions between the aviators and the committee in charge of the competition. From the British point of view, the result of the Gordon-Bennett contest, held on Saturday, was very satisfactory. Eight competitors were down to compete, including Messrs. Grahame-White, Radley and Ogilvie for Great Britain, Messrs. Brookins, Hamilton and Drexel for the United States, and MM. Latham and Leblanc for France. The course was 5 kilometres round, and this had to be traversed twenty times. Grahame-White was the first to get away, and he completed the twenty circuits in 1h. 1m. 47.4s., the speed being just a little over a mile a minute. Leblanc next made his attempt and set off at a very fast speed. At the end of nineteen laps he had bettered Grahame-White's time for the same distance by 5½ minutes. Then, however, disaster met him, his machine seemed to get out of control at one corner of the course and ran into a telegraph pole. The machine was of course smashed, and Leblanc was lucky to escape with nothing worse than some severe contusions and three bad scratches across the face. Ogilvie, on a Wright racer of the C type, which has a span of 26 feet, next had a try, and although he completed the course had to stop for 54 minutes owing to an ignition plug blowing out. His total elapsed time was 2h. 6m. 36s., and deducting the time of his delay it will be seen that his net time for the 62½ miles was 72 minutes, the speed working out to 51.6 miles an hour, a remarkable performance bearing in mind that the machine was only fitted with the ordinary 36-h.p. Wright engine. The machine had no elevator in front, but was fitted with a tail. Another Wright biplane was the next to start, this being the "Baby," with Brookins as the pilot, but when passing the grand stand at a height of 200 ft. the little machine turned over and crashed to the ground. Fortunately the aviator escaped without any broken bones or internal injury, although he was severely bruised. Latham also completed the full course, but made one very long stop, and his total time was 5h. 48m. 53s. Just before the closing of the 7-hour limit during which competitors could start for the prize, Moisant and Drexel, both on Blériots, started off to make a last attempt to keep the cup in America. The latter, however, retired after 7 laps, while Moisant completed the full course in 1h. 57m. 44.85s., thus securing second place, Ogilvie taking the third position.

By the victory of Mr. Grahame-White the cup passes into the custody of the Royal Aero Club of the United Kingdom and the next competition for it will take place over British soil.

On Sunday afternoon Mr. Grahame-White set off to fly to the Statue of Liberty and back for the Ryan prize of £1,000. He successfully accomplished the round trip of nearly 33 miles on his Blériot machine in 35 mins. 21.3 secs. Jacques de Lesseps also made the trip but his time was a little longer, 44 mins. 56.4 secs. Later in the day Moisant set out to try and better Grahame-White's performance and was successful in reducing the time to 34 mins. 38.8 secs. Mr. Grahame-White then announced his intention of making a second attempt whereupon Moisant protested to the Committee and asked that the meeting should be declared officially closed on Sunday afternoon, instead of Monday as was indicated in the programme. This was assented to. At the time of Mr. Grahame-White's first attempt he was informed by the Committee that the latest time of starting in this competition was 3.45 p.m. on

Sunday afternoon, but they subsequently revised this and allowed Moisant to start at 4 p.m., stating that the competition would be open until the close of the meeting. Mr. Grahame-White was also required to qualify by making an hour's flight, but this the Committee waived in respect of Moisant, who was awarded the prize.

On Monday several noteworthy performances were made. Moisant won the American Aero Club's distance prize by covering 87½ miles in 2 hours, Johnstone beat the height record on a Baby Wright by going up to 9,714 ft., and Mr. Claude Grahame-White had a splendid victory in a speed race with McCurdy on a Curtiss biplane. Using his Blériot monoplane Grahame-White covered the 25 kiloms. in 14 mins. 43.12 secs., while McCurdy's time was 25 mins. 43.04 secs. On Monday night the proceedings closed with a dinner given by the Aero Club of America, and it is greatly to be regretted that the dissensions which arose on Sunday afternoon should have led to the serious recriminations between the competitors and the management of the Belmont Park Meeting already referred to. As a consequence only five of the flyers, Moisant, Radley, Hoxsey, Leblanc and Simon, were at the official dinner, the others being present at a similar function given by Mr. J. Armstrong Drexel at which the majority of the flyers, including several of the American representatives, were most emphatic in supporting the protest made by Mr. Grahame-White. Mr. J. Armstrong Drexel, whose sportsmanlike attitude throughout the dispute will be appreciated on this side of the Atlantic, issued a strongly worded protest to the Press in which the following paragraphs occur:—

"I wish to protest against the action of the Belmont Park Aviation Committee in refusing to allow Mr. Grahame-White, the Englishman, to fly a second time for the Statue of Liberty prize. Their doing so is contrary to all traditions of sport, and as an American myself, familiar with the conditions of sport in Europe, I cannot allow the action of the Committee to pass without protest.

"Furthermore, by their decision they have barred such flyers as Mr. Radley, the Englishman, and M. Aubrun, the Frenchman, from competing. As a general result it will be freely said in Europe that the Liberty prize was juggled into an American's hands. This will only be the plain truth, according to the conditions of the contest as understood by the aviators.

"I was myself told by Mr. McCoy, Chairman of the Committee, in the presence of a witness, that the Statue of Liberty prize contest would be open till the end of the meeting, which, as he and everyone else knew, was definitely intended to include Monday. He also gave me to understand that the same man could make more than one flight, and that the best time would win. This, too, was the general understanding of the aviators, and no denial of it by the Committee can explain or excuse their subsequent action.

"My disgust at this betrayal is more, almost, than I can express. What is the feeling of the Englishmen and Frenchmen, could they be induced to speak their minds, I dare hardly imagine. Anyhow, it is my intention to resign immediately from the Aero Club of America. I hope all American sportsmen will follow my example."

At present it would be premature to comment upon this unsatisfactory state of affairs, and we await fuller details from America as to the facts of the dispute.

At a meeting of the Aero Club of America, held after the dinner, the Gordon-Bennett Trophy was handed to Mr. Claude Grahame-White. The French competitors announced their intention of returning to Europe on Wednesday.

CORRESPONDENCE.

*. The name and address of the writer (not necessarily for publication) MUST in all cases accompany letters intended for insertion, or containing queries.

Correspondents communicating with regard to letters which they have read in **FLIGHT**, would much facilitate ready reference by quoting the number of each such letter.

NOTE.—Owing to the great mass of valuable and interesting correspondence which we receive, immediate publication is impossible, but each letter will appear practically in sequence and at the earliest possible moment.

EFFECT OF ALTITUDE IN AIR AND WATER.

[864] I listened recently to an interesting discussion on deep-sea diving. It was pointed out that all descents and ascents had to be made very slowly, since a too sudden increase, or decrease, of pressure on the human body was attended with fatal results.

The idea immediately presented itself that this state of things would also obtain in the air. Assuming that this is so, and in view of the altitudes recently attained by aviators, it is a point which would seem to call for some attention. Not so much in rising, which is done comparatively slowly, but in the quick glides where hundreds, and even thousands, of feet are dropped in the space of a few minutes.

Except in exceptional cases (such as M. Morane's magnificent flight at Deauville), it should be possible to descend in more or less gradual circles, and obviate another, but unnecessary, danger to aviators.

I write as one who has no practical knowledge of the subject, and who therefore asks the opinion of those who have.

Stratford-on-Avon.

E. L. W.

[The difference of pressure per foot difference in altitude depends on the density of the medium, and is much greater in water than air. Hence, much quicker changes of altitude may be made in air than in water without serious effect.—ED.]

FLYING IN THE WIND.

[865] I have followed the correspondence of **FLIGHT** since its inception, but strangely enough do not remember anyone querying or explaining why an aeroplane does not lift so well with the wind as against it. I have given the matter some thought, and ask your permission to set out my views as follows:—

Supposing an aeroplane's flying speed is 40 m.p.h., and that it is started from rest into a 25 m.p.h. wind. When the machine reaches a land velocity of 15 m.p.h. it will rise and soar at that speed so long as the initial conditions are maintained. Now if the flight is curtailed to the limits of an aerodrome, and a return journey with the wind is essential, to do so, and to sustain flight, the land speed of the machine must be accelerated from 15 to 65 m.p.h.

Naturally the difference in the momentum of the machine travelling at 15 m.p.h. and when travelling at 65 m.p.h. is somewhat considerable, and the obvious result is the dropping of the aeroplane until the required momentum is obtained.

Then we have another question for thought. The power required to accelerate a mass to a speed of 65 m.p.h. is greatly in excess of that required to accelerate the same mass to a speed of 15 m.p.h., so that any surplus power which might previously have been used (up wind) for regulating the altitude, &c., must be used entirely or for the most part in overcoming inertia, and maintaining the necessary flight speed.

Chiswick.

ERNEST WARDE FOX.

PADDLE V. PROPELLER.

[866] From the time I began to follow the progress of the science of flight, a little more than a year ago, I always wondered why I never read about any attempts to use a paddle-wheel instead of a screw to propel the machines. In February of this year I saw an article on the Lester-Best airship model, which has paddle-wheels with adjustable paddle-boxes. Then in **FLIGHT** of January 22nd, 1910, a letter (305) appeared, with photo, describing a paddle-wheel on which the "floats" seemed to feather laterally.

The following is how my thoughts ran on the subject. I imagine a paddle-wheel placed just behind the main planes of a biplane, the paddle to be as broad as the main planes are long. Imagine, again, the paddle-wheel divided in the middle to permit the passage of the body of the aeroplane, thus making two wheels of equal breadth, the diameter to be any suitable size—perhaps a little more than the depth between the two main planes.

Suppose also, that by means of suitable gearing, the "floats" of the paddle-wheel are made to feather in such a way that, for the greatest part of the revolution possible, they shall press the air downwards and backwards, so assisting actively; and during the remainder of the revolution they shall place themselves at a certain angle of incidence that will help the "lift," so assisting passively.

To me, the advantages of this paddle-wheel method over the screw, as at present used, appear to be:—

First, the action in the air is more direct; it gives the beating motion of nature with the rotating motion which is so efficient in mechanics.

Second, with planes having adjustable angle of incidence, and placed so that they gave great resistance to forward movement, the paddle would give a more direct or quick lift when rising from the ground, and so make rising possible where a run could hardly be had. The pilot would level the planes as required while rising.

Third, the paddle-wheel would assist lateral stability by tending to eat up side gusts, as a bird helps to steady itself, when caught by contrary winds, by the beat of its wings.

Fourth, the wheels might be run independent of each other, and if necessary at different speeds, when turning corners.

Fifth, the aeroplane would pick up momentum quicker when turning to fly with the wind, because the paddle would exert a more direct thrust on the wind then acting as a "wake."

Sixth, the screw has to be supported by the aeroplane; the paddle-wheel would support itself when in motion.

I have not the opportunity of experimenting to find out if this is practical. It looks as if there was something in it but, if so, why is it not in use some-where? This idea must surely have been in other minds beside my own. I am told thousands of pounds have been spent experimenting along this line. The objection taken was that no matter how the "floats" were inclined, in the upward and forward parts of the revolution, the reaction of the air on them would press the machine downward and backward respectively, so counteracting, to a great extent, the work done in lifting and propelling by the "floats" when at the other parts of the revolution.

If this is so, why does the same not take place with birds when raising their wings between each downward beat?

Some of your readers who have tried something in this line might give their experience.

Since writing above I have come across a copy of **FLIGHT** for April 23rd, 1910, which had been mislaid when I was hunting through the others to see if there was anything in them about aerial paddles.

In this copy I see another letter (478) from E. Simkin, in which he says he has altered the "blades" of his paddle-propeller so as to "give a little lift as well as propulsion."

This means that we are both on the same idea, but the methods of putting the idea into practice will, no doubt, be quite different.

He might let us know what further success he has, and if the reaction of the air on the passive blades—or floats—is much in evidence.

Dundee.

ALEX. W. DOWNIE.

THE ACTION OF PROPELLERS.

[867] A friend and I have been arguing about the action of propellers, and now respectfully invite your assistance.

I contend that the action of a propeller is as follows:—

A propeller throws a jet of air backwards, which, reacting upon the still air beyond, pushes the propeller and the machine forwards.

My friend contends that the action is the same as a nut on a screw thread; that is to say, that the propeller literally screws itself through the air as if the air were solid. He therefore contends that a perfect propeller would have no back draught, and considers the present back draught an indication of inefficiency.

Tunbridge Wells.

F. HALSEY.

[Our correspondents do not appear to have read an article that we published in **FLIGHT** on January 8th, 15th and 22nd, wherein we endeavoured to explain the action of a propeller, and dealt in particular with the two aspects of the problem brought forward by our correspondent and his friend. We showed the limitations of the screw and nut idea, and also dealt with the simile of the jet.

The jet theory is correct, but not very well expressed in the above letter, that is to say, the driving force is not due to the impact of the jet against the inert surrounding atmosphere, as may be proved from the fact that the propulsive effect of a jet of water is the same whether the nozzle is submerged below the surface or has free access to the atmosphere. The propulsive effect of a propeller, or of any device designed to obtain a thrust from fluid reaction, results from the acceleration of the molecules of the fluid. All fluids have mass, that is to say, they weigh something, but however light they may be, setting them in motion calls for the exercise of a force and gives rise, by Newton's laws, to a reaction of equal magnitude in an opposite direction. This is the thrust that drives the aeroplane; the jet of air thrown behind from a propeller is the "slip." It is necessary to have some slip in order to obtain a thrust at all, but the slip does represent wasted energy. On the other hand, it is

not the only loss, and the problem of propeller design resolves itself into obtaining the maximum thrust at a desired speed for the least total power.—Ed.]

AEROPLANES VS. HELICOPTERS.

[868] In reply to letter No. 763, by "Octavius," I should like to make a few remarks.

Your correspondent says that "an aeroplane rising at an angle of 1 in 30 experiences 900 times the head resistance per unit area of body of a helicopter rising at the same speed," and he gives as the reason for this that the aeroplane has to travel a much further distance at a much greater speed than a helicopter in order to rise to the same height. But he appears to overlook the fact that in order to rise the blades of a helicopter must revolve, and consequently must experience resistance apart from that produced by its upward motion. The peripheral speed of the blades of a helicopter must be considerably greater than the speed of an aeroplane at the present day. For instance, a helicopter with blades of 14 ft. diameter, revolving at 240 r.p.m., has a peripheral speed of 176 ft. per sec., or 120 miles an hour. Since resistance increases with the square of the velocity, the resistance per sq. ft. at the end of the blades (the most effective part) of such a helicopter must be at least four times that of an aeroplane, assuming that both are moving through undisturbed air. Your correspondent assumes the total head resistance of a helicopter to be equivalent to that which it would experience by virtue of its upward motion also.

Apart from this, the aeroplane is not, and was never intended to be, a direct-lift machine, and therefore it cannot be compared with the helicopter when used as weight-lifter only. In order to compare the aeroplane with the helicopter on an equal basis, it would be necessary to propel the latter at the same speed and the same angle as the aeroplane. This would mean that more power would be consumed by the helicopter, thus placing it at a still greater disadvantage compared with the aeroplane.

It is well known that the aerial screw is inefficient when used as a propeller, and it is probably still less efficient when used as a helicopter. Even supposing it to be equally efficient, it gives the helicopter system a lower efficiency than the aeroplane system. Your correspondent gives the aeroplane system a total efficiency of 54 per cent. If a helicopter, having an efficiency of 60 per cent., were propelled by a screw-propeller, also having an efficiency of 60 per cent., its total efficiency would be only 36 per cent., or 18 per cent. less than that of the aeroplane. The low efficiency of the aeroplane system is almost entirely due to the screw propeller. In order to increase its efficiency some new form of propeller is required.

The aeroplane system being the most efficient, its chief disadvantage is that it can only rise from the ground at a very small angle. In order to adapt the aeroplane system to a direct-lift machine it would be necessary for the planes to be made so that they could move rapidly while the machine is stationary. In connection with this principle I will quote Mr. Edison's views on the subject. He says: "If I were to build a flying machine I would plan to sustain it by means of a number of rapidly-revolving inclined planes, the effect of which would be to raise the machine by compressing the air between the planes and the earth."

If the planes are to move in a direction at right angles to their span, while the machine itself is stationary, they must either move in a circle or oscillate backwards and forwards. A machine built on this principle would, I believe, contain all the advantages claimed for the helicopter, and in addition would carry more weight for less power.

Leamington Spa.

G. B. BENNETT.

ASPECT RATIO.

[869] In reference to letter 762, you mention that aeroplane engines are at present started by turning the propellers. In this case how are the engines restarted after a *vol plane*?

What is meant by the aspect ratio of an aeroplane?

Your excellent paper is invaluable to all interested in aviation. Crews. F. B. W. A.

[Pilots do not allow their engines to stop turning in mid air, although they may momentarily switch off or throttle down.

Aspect ratio is the ratio of the span to the chord.—Ed.]

HYDRO-AEROPLANES.

[870] In your issue of September 24th, it is stated that M. Fabre's machine has risen and traversed more than 3 kiloms.

Some of us have been trying similar experiments (but without the success) on Lake Windermere, and should be very glad to know whether any of your readers would care to undertake or assist in similar experiments. I could offer facilities on Windermere Lake if they cared to communicate with me.

Kendal.

EDWARD WILLIAM WAKEFIELD.

CAN WE FLY FASTER WITH LESS POWER?

[871] I should like to be allowed to offer my sincere congratulations to you *re* your articles under the above head. In my opinion, you are absolutely right in every respect in your conclusions. And you show a determination to disregard the orthodox expert, and trace difficulties to their source for yourself that is admirable in these days of follow-my-leader science.

Some time last year, at the close of a series of very interesting experiments, I wrote a small pamphlet on aviation, which I sent to the aviation papers and to several of the newspapers. Some of them returned the copy with polite regrets, some without any regrets, some did not return it at all. My points were: (1) Smaller planes; (2) planes nearly or quite flat; (3) a boat-shaped or stream-line car to contain the engine, pilot, &c. My reasons were that a design of this kind, by reducing the head resistance, would allow much greater speed, which would mean greater stability and indifference to adverse gusts, and make up for the smaller supporting surface and the absence of camber. Also, such a machine could be constructed much more strongly with less weight than any of the machines having to stand the tremendous leverage of widespread planes. I am pleased to see how closely you corroborate every one of my points.

In the pamphlet alluded to I also advocated two other things besides those mentioned; a new method of propulsion and a new force to use with it. These last two, however, are still affording as much amusement to the experts as my other three points did, and so I expect I had better say nothing further about them till the author of your article or some other equally enlightened writer states his views, and I find myself, much to my astonishment, suddenly arrived in quite respectable and orthodox company.

Manchester Street.

W. LE MAÎTRE.

PATENTS.

[872] We should be the last people to discourage the advancement of new ideas, but in the interests of inventors themselves, it seems necessary to warn them that the descriptions which some of them have allowed to appear lately in the Press unfortunately ruins their chances of obtaining valid patents, unless the application for the patent has been previously made. After the application is made, however (whether for a full patent, provisional protection, or design registration), it is generally safe to make full disclosure of the invention at once, and even to begin selling, if an opportunity presents itself. Inventors who ignore this advice simply give away their ideas to the public, which, if they can afford to do so, is perhaps the most generous thing to do.

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NORMAL PRESSURE.

[873] Could you please tell me what pressure 5 m.p.h. wind would represent when meeting a stationary 1 ft. sq. plane, whole surface against the wind, and would 10 m.p.h. wind represent twice the pressure of 5, and 15 three times the pressure of 5, and so on? If not, what would be the rule for determining this in the absence of special instruments? Would 6 ft. by 2 ins. have the same resistance against the wind as 12 ins. by 12 ins.?

New North Road.

H. H.

[The pressure on a normal surface at 5 miles an hour is 1075 lb. per sq. ft. (see "Flight Manual," Table 155). The pressure varies as the square of the speed (see "Flight Manual," Note 1), and is also affected by the shape of the plane (see "Flight Manual," Note 13), in such a way that the mean pressure per sq. ft. is greater on long narrow planes than on square planes. The formula for calculating normal pressure is derived from the theory explained in "Flight Manual," Formula 76, and includes a constant for which various values have been found by different experimenters (see "Flight Manual," Table 154). An average working value for approximation is given by the formula $P = .003V^2$ (where P = pressure in lbs. per sq. ft. and V = flight speed in m.p.h.).—Ed.]

THEORY OF THE BALLOON.

[874] Could you please inform me what is the correct technical theory why a balloon or dirigible lifts?

Glasgow.

AMATEUR.

[The theory of balloons is based on a property of fluids which is known as "Archimedes' Law," which is to the effect that anything immersed in a fluid is acted upon by an upward force equal to the weight of the fluid displaced. The enunciation of this law and its application to aerostatics will be found in "Flight Manual" Notes 129 to 188.—Ed.]

MODELS.

TWIN-SCREW MODELS.

[875] With reference to Mr. L. Meek's letter, No. 769, which was in reply to Mr. R. G. Pinnock's letter, 657, for a beginner's model, Mr. Pinnock would do better if he fitted the two propellers as shown in Fig. 1.

Mr. Meek shows two propellers, as in Fig. 2, but I do not think

FIG. 1

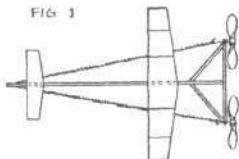
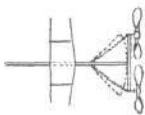


FIG. 2

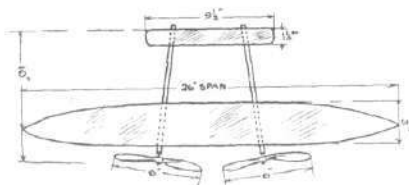


these would answer very well, for they would bend the stick as shown by the dotted line, perhaps break it. Again, the run of the propellers would not last long enough for a good flight.

Has any reader got Nos. 45 and 46 of FLIGHT, Vol. I, for sale?
Coventry. L. G. RYLEY.

LOADING OF MODELS.

[876] In regard to R. D. Thomson's letter (No. 733) on the loading of models, I may say that I have made several models something after the Fleming Williams type, only the elastics work in tubes. Each screw is 6 ins. in diameter, and is worked by



50 ins. of elastic. The best flyer weighs about 3 ozs. with elastic, and flies from 80 to 100 yards in 5 seconds, and rises to a height which averages about 20 ft.

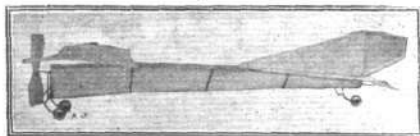
Enclosed is a sketch of my model. I think that this is a very creditable performance for a model of that size and weight. I also claim a certain amount of automatic stability, for my models when fairly started on a windy day, will roll in the air like birds do in stormy weather. The distance and time of this model works out at from 32 to 40 miles per hour. The longest flight I ever obtained from this model is 122 yards, it being carried on the wind after the screws had ceased to rotate. I would be glad to hear of the performances of other readers' models.

North Kensington.

L. SENECA.

MODEL AEROPLANE.

[877] I enclose a photograph of a model aeroplane that I have constructed. I should be much obliged if someone would kindly point out the defects that have prevented me from obtaining any



successful flights with this machine. It weighs 12 ozs., has a span of 38 ins., chord of 9 ins., overall length 44 ins., propeller 8 ins. in diameter, and has a motor consisting of 24 yds. of $\frac{1}{16}$ in. elastic.
Redditch. GEORGE BURGONYE.

QUERIES.

[878] In FLIGHT of October 15th the address of Mr. A. Rippon (No. 826), who would be pleased to help in forming a club for South London, should have been 5, Limesford Road, Nunhead, S.E., instead of Liverpool Road as printed.

REPLIES.

[879] N. S. Barker (Bury) (787) wishes to obtain drawings to make a model Antoinette. In the workshops of the Manchester Aero Club there are the necessary scale drawings for this as well as other model aeroplanes. Mr. Barker would therefore do very well to join the Model Section of this club. H. V. R. (Manchester).

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L'Aviation de Demain. By François Ernoul. Paris: Librairie Aeronautique, 32, Rue Madame. Price 3 frs.

RECORDS.

Distance and Duration.—Maurice Tabuteau (France), at Etampes, on a Maurice Farman biplane fitted with Renault motor: 465 kiloms. (290 miles) in 6h. 1m. 35s.

Speed.—J. Radley (Great Britain), at Lanark, on a Blériot monoplane with Gnome engine: 1 mile in 47½ secs. = 75.95 m.p.h.

Altitude.—Johnstone (America), at Belmont Park, N.Y., on a Wright biplane fitted with Wright motor: 9,714 feet.

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23,757-8.	A. CREESE AND W. DEDRICH.	Flying machines.
26,201.	I. H. STOREY.	Flying machines.
26,962.	J. W. BENTHAM.	Flying machines.

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12,934.	E. BUCHER.	Dirigible airship.
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